The Builder.

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A Sanitary Survey: What is it?

LOCAL Sanitary Authorities are issuing advertisements for inspectors of nuisances,—taking the name from the new Public Health Act, although "local sanitary inspector" would have been a more appropriate name, and they say that one of the duties will be to make a sanitary survey of the district. It has occurred that this term has been misunderstood at both ends of the line which connects the persons sought with those who are to appoint them; and, in such things as these, what has been may be again. On a recent appointment, two at least of the half-dozen selected candidates were in much doubt as to what they would be expected to do to fulfil the requirement of a sanitary survey. It is not defined in the instructions issued by the Local Government Board. The advertisement set forth that the salary offered was intended to include all expenses. But that cannot be. That it should include all personal expenses, travelling and other, is proper enough, and it is an arrangement that will save many small troubles to both the authorities and the officers. There will be expenses, however, incurred by the inspector of nuisances in the discharge of his duties, which must be paid by the Board as they arise; such, for instance, as the employment of occasional assistance, rendered necessary to enable him to carry out special orders of the Board; and it was apprehended by some of the candidates that these might amount to something serious. In connexion with the sanitary survey, however, there are few, if any, beyond personal expenses.

The inspector will personally observe the existing state of the premises of every house in the district, and note down his observations in a book on the spot. He will ascertain the position of the well or other source of water-supply, and take a gallon away with him as a sample for analysis, for this purpose requiring from the Board a stock of stone jars, the corks of which are to be sealed on the spot as soon as the sample has been taken. He will extend his observations of the state of the surface, and what may be upon it, to a distance all round the premises the drainage from which he may judge to have any influence on the well or other source of water supply. He will ascertain, both by inquiry and observation, the nature of the ground upon which the premises are situated, whether on clay, gravel, or rock, and the direction of the dip of the strata, if any. He will ascertain and note down the distance from the well of any cesspool or other receptacle of refuse organic matter, and whether it is on the side of the dip or on that of the rise of the strata, in respect of the well. He will see in what manner the slops and sewage of the house are conveyed away from it, and where to. If there be a water-closet in the house, he will ascertain whether any provision has been made for carrying off the sewage gases to some place where their escape will be harmless. (If required to do so by the medical officer of health, he will inquire also into other particulars). He will ascertain the number of pigs kept upon the premises, and the distance of the sty from the house. Comparing the evident size of the house with the number of persons living in it, he will exercise his judgment in desiring to see and to measure the rooms of the house, and distinguish living from sleeping rooms. This part of his duties may easily become disagreeable to the tenant, if not exercised with judgment and discretion. It must, nevertheless, be done wherever there is a reasonable supposition of overcrowding.

Having made such a survey of the premises of every house in the district, the inspector of nuisances is to make a report to the Board of the sanitary state of the district. Either at the same time or afterwards, upon being asked to do so by the Board, he is to suggest such remedial measures as may seem to him proper for removing all nuisances from the premises of the houses, and suggest such works of a permanent character as in his judgment may be necessary to prevent the recurrence of nuisances. These, so far, relate to every dwelling-house in the district. In addition, he will inspect and report upon the condition of every slaughter-house, and every place of business where the trade carried on is of a noxious or offensive character. Nothing less than such a survey as this will be of any avail. More might be included. To take the items *seriatim*.

1. The well or other source of water-supply. If it is situated on the rise of the strata with respect to the situation of any cesspool or other receptacle of organic matter, it will be less likely to be polluted; if, on the other hand, it is situated on the dip, it is almost certain that the water in it will be polluted. It is necessary to supplement this information by a concurrent report of the analyst as to the actual condition of the water at the time of the survey, for which purpose the inspector will deliver to him a sample. If both the inference to be drawn from the position of the well and the analysis are favourable, it will be a happy state of things for all parties; but if the dip of the strata would lead to the inference that the water would probably be bad, and the analysis confirms the inference, then, clearly, either another source of supply must be sought, or else the source of pollution must be done away with. It must be observed that to judge of the permanent quality of water by the analysis of a sample alone is not sufficient, for a sample (over a whole district inspected by only one man) can be taken but seldom, and the occasion may happen to be a favourable one or the contrary, in respect of any long time, such as a year. The physical characteristics must therefore be considered, as well as those which are chymical.

2. The house slops, and how they are conveyed away. If the ground be porous, as gravel or sand, or sand rock, it will often be found that the slops are conveyed into the cesspool, there to be contained until they soak away. This is the very worst form in which they can be dealt with. Almost as bad is that in which they are thrown out of the back-door on to the surface, thence to soak away and evaporate. The only thing in which this way is better than the other is, that the slops do not convey into the surrounding ground the organic matter of the cesspool. Again, the slops may be drained away to a ditch, at more or less distance from the house; but here, while the soakage will be less, the annoyance from evaporation will be greater, and the offensiveness more concentrated. But there may be proper sewers into which to drain the house slops and other sewage. In this case it is sufficient to see that all openings at the ground level (near the house) into the drain communicating with the sewer are properly trapped, and that the gases which necessarily arise from the decomposition of the sewage are led away by one or more pipes to a place where their escape cannot contaminate the air breathed by the inhabitants; and that place will in general be above the roof of the house, providing that the place chosen be not in proximity with bedroom windows. For this purpose also, the soil pipe of every water-closet should be carried straight up to a point some 2 ft. or 3 ft. above the roof, and there terminate with an open end. Fanciful cowls, hoods, or other obstructions to the escape of the gases are generally worse than useless. The size of these ventilating pipes should not be less than 3 in. diameter, but the larger the better. The drains should not be taken *into* the house if it is possible to avoid it; but should terminate outside the wall in a proper trap, and the slop-water should be led by a pipe into that trap.

3. Pigstyes are a great nuisance *near* a house, and yet it is a manifest hardship to interfere with the keeping of a pig, or even of several. Many inspectors, and amongst them some of the best, are of opinion that pigs may be kept so as not to be a nuisance, if the sty be not nearer than about fifteen or twenty yards from the house, and providing that, at whatever distance, it be kept as clean as a stable or cowhouse is kept when properly attended to.

4. It is probable that in every district to which inspectors of nuisances are now to be appointed, some houses, and often many, will be found to be overcrowded. Overcrowding is relative as to space. It is a very wide question, and one not to be hastily dogmatised upon. It is one that will cost every inspector a great deal of trouble, a great deal of investigation into the opinions of the best authorities, and a great deal of thought on his own account. It is true that he may, and ought to, throw the responsibility of deciding these things upon the medical officer of health, and ultimately he must do so; but before he can make a report on his survey he must either understand this question himself, so as to be able to say that this or that house is overcrowded, or he must report the number of people in every house, and leave the medical officer to decide for himself.

This sanitary survey does not touch upon—or rather it is beyond and outside of—the ordinary duties which are set forth in the instructions issued by the Local Government Board, such as attending meetings of the Sanitary Authority when so required; visiting any spot on receiving notice that a nuisance exists there; visiting and inspecting shops kept or used for the sale of butcher's meat, poultry, fish, game, flesh, fruit, vegetables, corn, bread, or flour, or as a slaughter-house; and examining any animal, carcass, meat, poultry, game, flesh, fish, fruit, vegetables, corn, bread, or flour which may be therein; and in case any such article appear to him to be intended for the food of man, and to be unfit for such food, he is to cause the same to be seized, &c.; communicating with the medical officer on the occurrence of any contagious, infectious, or epidemic disease; disinfecting articles to prevent the spread of disease; entering from day to day in a book particulars of his inspections, and of the action taken by him in the execution of his duties; keeping other books as a continuous record of the sanitary condition of each of the premises in respect of which any action has been

taken under the Sanitary Acts, and any other systematic records that the sanitary authority may require; producing his books to the medical officer when required, and rendering to him such information as he may be able to furnish; superintending and seeing to the due execution of all works which may be undertaken for the suppression or removal of nuisances; and, in general, that he shall observe and execute all the lawful orders of the sanitary authority, and the orders which may be hereafter issued by the Local Government Board.

In the discussions which have already taken place in various parts of the country, at meetings of boards of guardians, since the regulations of the Local Government Board have been issued, there has been considerable difference of opinion as to what would be the respective duties of the medical officer of health and of the inspector of nuisances; some members of boards being of opinion that the medical officer would have little to do but to confirm the reports of the inspector of nuisances. Without going into the question of what the particular duties of the medical officer may be, we may yet say that we think he will have very much to do if he is a really efficient medical officer of health, and if his chief attention is turned to the prevention of disease, by bringing those sciences which relate to the subject, physical and chemical, to bear upon this great question of the public health; for it is not so much to the reduction of mortality that he is to attend, as to the prevention of sickness and the contraction of those diseases which tend to deterioration of race; and, on the other hand, to insure that those who live shall live healthily. This is the responsibility laid upon him.

It is observed that the several Government inspectors appointed to advise local authorities under the new Act, do not all recommend the same action on the part of the inspector of nuisances in making his reports. Some advise that he shall report to the board, and some to the medical officer. This discrepancy may be due, not to any abstract and general difference of opinion, but to local circumstances. It is, probably, of little importance in which way the reports shall be made. The one thing above all others of importance is a thorough agreement between the two officers to promote the health of the people. Neither can possibly in this case aggrandise himself at the expense of the other, and the only way in which either can possibly be useful is to sink minor personal questions in the great public one.

THE GOTHIC BUILDERS YET AT THEIR WORK.

There are so many differences between the old system of things and the new of to-day as regards art and architecture, that there would be no small difficulty in fixing on any one difference conspicuously prominent. The old arts and architectures, as a rule, rose up into existence we hardly to this hour know how; they went on, and progressed, and at last for the most part died out, and became extinct, and gave place to new styles of art. Gothic architecture and fine art in this country exemplify this in a remarkable and not a little instructive manner. The growth of the Early English Gothic, to use the ordinary and so well understood terms, its expansion or development into the Decorated, and its fall, as most people think it, into the Perpendicular, and its final death in Elizabethan, all went on as perpetual change in an almost imperceptible way. No one, and certainly not those who worked out the great problem, could draw a hard and fast line between the one phase of this style, and the other next to it, and following it. There is, as all know, a sufficiently marked distinction between the Early English, and the style which succeeded it, the Decorated; but there is no particular time at which a point can be fixed as the exact changing turn in them. The styles never struck the hours. All went on in a gradual and unnoticed way. Nothing seems to have been needed but the native capacity of those who worked out the several styles, each in their own age and generation.

So much by way of reminder as to the old Gothic art and architecture, and the methods of their production. But how different was it to our modern system of bringing Gothic forms and architecture into existence. Let us consider it for a few moments, and note the difference. Before the modern Gothic movement, by a sort of accident, there occurred an architectural *interregnum*. Brick-and-mortar construction took the place of art and architecture, and the Gothic that sprang by slow degrees into existence was, as all know, directly *copied*, as nearly as could then be, from "examples" of the old Gothic remains and *ruins*. The way in which this was done, and the special phase of Gothic, the "Perpendicular," which was at first fixed on as a something "Gothic," and as containing "tracery" to copy, need not now detain us: we only want to direct attention to the fact of the copying or imitation of old examples of Gothic art, and to the distinction to be observed between the old way of producing Gothic and the modern system. The one was, as we have noted, a *growth*; the other is as a *replanting*: the one was as a growth of natural plants; the other is as a copying of these natural plants in new materials, and in a modern way. Let us note, too, in passing that this new and artificial *reproduction* of the old forms of Gothic has not been, and is not confined to *one* particular phase of Gothic, but all phases of the style, and all countries have been, and are yet, drawn upon for fresh and ever new "precedent" to go by and to follow. There are many other causes at work besides this primitive one, which absolutely prevents the production of a Gothic building in the same way and in the true spirit of the old work.

But now the question occurs, and a curious one it is, what would have been the position and nature of Gothic art and architecture, had the style gone on and progressed from the Perpendicular to the present time, as it did go on and progress without any disturbing influence from the Early English to the Perpendicular? and is there anything that is constructed in the present day that is, in like manner, a following on from the old Gothic days? It would be vain, we think, to look round for any such object. All things have changed; for not only have most of the old objects of use been superseded by new and improved ones, but even those things which have not been so superseded are changed in form and in *details*. The old Gothic art is really, and in sober fact, as dead as the extinct animals of the pre-Adamite age. But yet there is one object to be seen by the eyes of modern Londoners,—not, it is true, in the streets, but on the river that runs through London,—which not only recals the old Gothic forms and ways of work—the "Mediævalism" of the past,—but is in truth a *bonâ fide* remnant, so to speak, of it. We allude to those strange-looking *boats* which some readers may have noticed, not too genteel to look at such out-of-the-way things, called "galliots." These vessels are fishing-boats, and in them are stored up in water-tanks the eels which supply the London markets. They are of Dutch build, and manned by Dutch sailors, and are well worth the attentive looking at by those who take general views of art. It would be difficult, if not impossible, to describe them. They lie low in the water, and are round and tubby enough both in stem and stern; they are decked boats, with huge lee-boards, and with short single masts. Turner delighted in them, as well he might, for nothing can surpass their fitness and attractiveness as *boats for the painter*. They are not painted, but the natural wood is allowed to show itself; and the colour of the sails, whether in sunshine or out of sunshine, must always remain the despair of the painter, however imaginative, and buy his colours where he will. It must have been in just some such boat as this that brave Columbus and his companions sailed into that then fabulous and mysterious ocean which is nowadays crossed with as much ease and certainty as men go to Gravesend. Much has been gained, but a little something has been lost! But to the structure and mode of design and working *details* of these boats. They are real and *bonâ-fide* "Gothic" boats, and are, doubtless, the traditional remains of the old Gothic or Middle-Age system of boat-building. Nothing can surpass the neatness of their build, and the carefulness with which they are put together. The *mouldings*, and timber ornaments, and splays, show real artistic feeling, and wherever the main constructive timbers end, and show themselves, this is to be seen, as in the rudder and rudder-post. Indeed, generally, we may affirm that no modern "improved" steam-packet boat, with every possible help, and with the best materials, has any place by the side of one of those quaint vessels as an *artistic* performance, and as a picture. Let us repeat that these things must be seen, if not in reality, at least in pictures,—say, in one of Turner's, who never missed opportunity of putting them into his boat pictures. They are famous sea-boats, and last out many a modern craft, and come safely sometimes into harbour when other more improved vessels come to grief. We are not going to advocate the going back, even for artistic purposes, to this style and method of boat-building, any more than to plead for a return to the *coach*-building of the days of Queen Elizabeth, as shown in our Lord Mayor's state-coach, as compared with a modern improved carriage or tram-car; but of the artistic difference between them there can be no manner of doubt. What, we may here ask, is the loss and gain,—an "improved" boat or carriage without art, or an old-fashioned boat or carriage with art? Can both be joined? What, for instance, can be done with a modern New York tram-car to give it a place in a picture in the same way of fitness as the old gilt coach of Elizabethan fame serves? Here is a modern problem of no small importance, significance, and difficulty.

We have thus called a little artistic attention to these curious things while they yet last, for there are signs of their disappearance into that gulf of progress which is truly absorbing everything that is of the *past*; and we have adduced it as a singular instance of the past in the present. The old Gothic workmen, and their mode and style of work, yet live in the present for a little time longer. What would our architects, and antiquaries, and art societies, think, if but, in some solitary and out-of-the-way London bye-street, there should be not only, as there are, things out of date, and of past ways of construction and ornament; but that there should be found, *yet working in the old methods* and *traditionally*, a few workmen at an object long since supplanted elsewhere by more modern and improved constructions? Or, to put it yet more significantly, what would be thought of a new chapel building up in some out-of-the-way place, by the old workmen of centuries back, in their own way, with all their prejudices and quaint ways of work, *without* book "precedent" to go by, for they would need none, and but with the single purpose of use, the art being all the while simply instinctive? The past in the present! All this seems strange enough, and hard to realise; yet is it a practical reality in the case of these Dutch fishing-boats in the river Thames. They are, as we have said, probably the only things now being built, and we have seen them in process of building, timber by timber, in modern civilised Europe at least, which can be said to be, in the true sense of it, really "Gothic," not copied Gothic, or a reproduction of the old forms in new materials and by living hands; but the old work itself, and the ways of that work, still going on traditionally by, it is true, modern hands and heads, but just as though nothing had stepped in between the days of genuine Gothic art production in Gothic times and now. It is genuine and true work indeed, and the truism of Darwin is evidenced in *art* as well as in nature; that while any amount of change may be going on in a race of beings in nature, the old primitive forms may yet, in some rare cases, endure and perpetuate themselves, in spite of these changes. It surely is so in these queer and quaint Dutch fishing-boats. May they last yet a little while longer!

It is hardly possible in these few hasty remarks on a new art-subject to do more than glance at it. To go into detail adequately would be impossible; but there is one speciality about these curious constructions that is well worth some attention. We refer to the drawing and character of the *mouldings, i.e.*, the timber mouldings. It may seem curious to talk of mouldings at all in connexion with ship or boat building. Engineers and ship-builders are not much given to mouldings; but in these Dutch boats not only are there mouldings, but they are surpassingly good, and thoroughly well and carefully drawn. The ends of the timbers, where they show themselves, as we have before said, are noteworthy, and evidence how much is to be done in the way of what some might think insignificant details. There is a neatness, too, about these quaint boats for which we must give the Dutchman full credit: a little of the spirit in it and about it of that which produced the Dutch paintings, so much admired by some, and as much abused by others. Unfair abuse; for the Dutchmen have left us, not what they could figure to themselves of Italians, but what they themselves really looked like, and thought, and did! We say nothing of the quaint cabins in these boats, or of many other things in and about them, or of the *men*, with half Gothic lingo, who man them. But a good deal might be said. Sufficient for the day and for us is the art and the architecture of it.

HISTORY IN STAINED GLASS.

ARCHITECTURAL ASSOCIATION.

At the last ordinary meeting, held on Friday evening, the 13th instant, Mr. J. D. Mathews, the President, called attention to the arrangements that have been made for the benefit of country members;—enabling them to obtain books from the circulating architectural library, and to take part in the studies of the class of construction and the two classes of design. A prize is also offered for an essay to be competed for by country members only. It is hoped that a fair number of students in the provinces will avail themselves of the opportunities thus afforded of sharing with other members the benefits of the educational work of the Association.

A lecture was delivered by Mr. C. Baily "On History illustrated by Stained Glass, as exemplified in the Windows of Long Melford Church, Suffolk." Drawings reproducing many of the Windows in their actual size and colour were hung round the walls. The Church of the Holy Trinity at Long Melford was rebuilt in the fifteenth century under the direction of John Clopton,—a representative of an old English family located from a very early period in the neighbourhood. It is one of the numerous churches of this period in which the county of Suffolk, particularly its south-eastern portion, is very rich;—the wealthy families of the district rivalling each other in endeavouring to erect grand buildings.

The history of the rebuilding of the church is told in inscriptions cut in the stone parapets outside the building: one inscription giving the date 1494, by which year the church was probably in the main completed. The people who assisted with their money and their goods in the rebuilding are commemorated,—*e.g.*, "John Pie and Alys his wyf of whos goods yis arch was made and yes twey wyndowys glasid," &c. John Clopton, thus assisted, filled all the windows with stained and painted glass, the church and its several chapels containing no less than ninety-six large windows. Some of this glass is in the church at the present time, although but a small quantity compared with the large amount originally in the building, and, having regard to the ill-usage which it has received during the space of four centuries, the figures now remaining are in a tolerably perfect condition. In 1862 the whole of the then remaining painted glass was taken from the original situations, collected together, and reglazed in the east window and in two windows at the west of the aisles of the nave,—a course strongly condemned by Mr. Baily as reducing the value of the remains, especially in the case of a number of ancient fragments, each of much value in its original position, now brought together in patchwork and rendered worse than useless. The glass is of two different kinds:—I. Figures of saints and subjects relating to sacred history; "Our Lady of Pity" (a figure of the Virgin holding the dead Christ in her lap); St. Edmund, king and martyr; St. Dominic, the founder of the great order of Mendicant Friars, a figure rarely found in English churches; also a figure of Peter Martyr (the disciple of Dominic), perhaps the only example in England,—represented with a deep gash in his head, and the blood trickling from it; a closed book in his right hand, in his left a sabre with which he was struck down;—a dagger or short sword is also stuck through his heart. II. Representations of secular persons, members of some great families of England, who have played conspicuous parts in the times in which they lived, and whose deeds are recorded in the history of our country. As works of art, the figures may not, perhaps, claim a very high position, much of the drawing and execution being of a rude character; but as illustrating the history of fifteenth-century art in England, and throwing the light they do on the peculiar costume of the time, as well as confirming many otherwise doubtful questions of a genealogical character, they are of real interest and value. John Clopton, in selecting the persons whose effigies he wished to place in the Melford windows, appears to have included those illustrious families with whom he could claim connexion either in blood, by marriage, or by political sentiment (J. C. was a zealous Lancastrian); for in most cases where information can be obtained respecting the persons represented, something appears which indicates a connexion with the Clopton family. Thus, owing to relationship to the Howard family, we have a Lady Howard in the west window; elsewhere Elizabeth Howard (wife of John de Vere, Earl of Oxford, the Master Philipson of Scott's "Anne of Geierstein"; Eliz. Tilney (wife of the second Duke of Norfolk, the hero of Flodden Field); Sir William Howard ("Chief Justice of England," reg. Ed. I.), but this latter figure (represented in judicial robes) being executed nearly 200 *years after* that time, cannot be considered a portrait. There is a marked difference in the execution of the portraits of non-contemporary persons, the individuality noticeable elsewhere being exchanged for tame drawing of conventional features. This renders it additionally probable that the portraits were studied from the living originals, where possible. Two Lord Mayors of London appear,—Sir John Gedney (1427), Sir Ralph Jocelyn (1464 and 1476), both connected with Clopton by marriage: also John Haugh, serjeant-at-law and (1487) judge of assize, the giver of some of the stained glass,—a portrait especially valuable as an illustration of Chaucer's Prologue,—

> "A Serjeant of Lawe, war and wys,
> That often hadde ben atte parvys,
> * * * *
> The rood but hoomly *in a medled* [*medley*] *coote*,
> Gird with a seynt [girdle] of silk, with barres smale;"

A relic of the old custom (of wearing striped or rayed gowns,—parti-coloured, blue and green, and blue and brown) yet remains. On the first day of term the serjeants wear purple robes; at sittings *in banco*, black cloth gowns; and on State occasions and Lord Mayors' dinners they appear in scarlet. The coif, which shows as a little patch on the modern judge's wig, is here in its old form of a white cap above the wig, and tied under the chin. A figure of Richard Pygot, facing that of Haugh, illustrates a somewhat mechanical manufacture of figures for such positions; the features are different, showing that each is intended as a portrait, but the outlines of the figures are almost identical, being merely reversed; the leaded lines exactly coincide. A similar instance occurs at Nettlestead Church, Kent; St. Stephen, with stones in one hand and a book in the other, is balanced against St. Lawrence with a gridiron,—the two figures being repeats (except the faces) as to the emblems and dress colours. Mr. Baily took in this way the several portraits (of which there remain thirty-one in all), calling attention to the genealogy, the personal and other connexion with the Clopton family of the different persons, their connexion with the history of the Government or the nation, as in the struggles of the Wars of the Roses; the specialities of their costume, or of the heraldry depicted thereon; and of the architecture and church furniture and fittings also shown. As treating more at length of the genealogical details necessary to the comprehension of the scheme of this interesting and probably unique series, he mentioned a paper read by himself before the London and Middlesex Archæological Society, session 1871.

INSTITUTE OF PAINTERS IN WATER COLOURS.

To compliment very highly the Institute of Water-Colour Painters on the present show arranged for exhibition in their gallery, would be to stultify former recognition of the high position its members have attained in establishing a comparison between the resources of their chosen medium and any other that might be adopted as sufficient means of achievement for nearly any result the painter could look for. There is no hiding the fact that these resources, year after year, are made to appear more restricted to a humble service than former application of them made it reasonable to believe would be the case. It may be said that this is quite suppositional,—a mistake proceeding from a wider-spread, a more common ability to diffuse such claim to the admiration that was formerly concentrated on the few that excited it; and that artistic excellence was never so rife or so sure of acknowledgment as it is now. This may be answered syllogistically. An ability so widely spread must be common indeed, and acknowledgment so cheaply obtained, of little beyond to-day's worth,—acceptance of show. However, neither fashion nor photography is likely to inhibit the ready provision that abounds to feed their vanity, and these are the presiding deities that an artist's pencil swears to, nowadays, and that everybody else swears *by*, in exemplification of a seeming wise discretion between what should be seen and what could be seen. Everything with a colourable excuse will make a picture now, so long as the colour includes the pink of demand; and art will sleep in its dictionary bed,—a word to signify "cunning, skill, knowledge, a trade." Let it be said that art's appearance is as evident as ever,—even in twenty shillings change for the pound we should miss the presence of the sovereign; and to hold the great coin many would hesitate who think small change small change, though great change, before they identified the equal worth, and would like to change. It is a shilling age, and a chilling one for those who would think it golden if they could.

Messrs. L. Haghe, E. H. Corbould, and Henry Warren, with whose names the celebrity of the Institute is so closely associated, are amongst the members not assisting on the present occasion. Mr. J. Absolon sends numerous examples of his rapid, dexterous, and agreeable style; heads all glorying in one complexion; single figures in the costume of bygone ages—of which the most pretentious "Ginevra" (39) will not by many be voted the best. Mr. G. G. Kilburne's pretty page, "Viola" (46) may be read for Shakspeare's or not; but it is the best study amongst others here that he has worked at. Mr. J. D. Linton is at a loss for a title, by which he could make good his claim to valuable property; his presentation of three odd personages is nearly as funny as it is finished (230). Finish, to a very admirable completeness, is the predominating excellence of Mr. A. C. Gow's interesting picture of "The First Provision Boat for the Besieged Town" (58); there was more colour of a sort to such an incident 200 years, or more, ago, and of this advantage Mr. Gow has made great and good use. The work only fails in its want of the intensity that later experiences have proved to belong to the subject; the depth of such colour by which recent fact makes pale all past account and fiction. Crowds, cleverly crowded, are hailing the arrival of the boat into port; it might carry hay or fireworks, so far as may be learnt—beyond the catalogue. The preservers loll in easy indifference to any exciting cause beyond the pleasure of taking a long shot to pot a possible pursuer; no hasty scramble for loaves to disturb the good behaviour of the hungry; no starved wretch plunging into the quiet water, clamouring and clambering up the vessel's side for the speediest help; need gives wide latitude to the necessitous. There is nothing gaunt or greedy to hint at the cruelty of want, no ugly strength in this pleasant illustration of painful truth; though it gives room for the imagination,—a great thing for a picture to do, as pictures go nowadays, when matter-of-fact not of the right kind so frequently shuts out all the suggestiveness by which very much is attained towards its real worth to lead thought, by its canvas, through and beyond it, if text were as much cared for as texture. It is a very meritorious production, notwithstanding the objection. Mr. C. Green's sketches are, as usual, careful and clever, whether in pen-and-ink (158) or stippled up and cross-hatched on bright tints, as in the view he takes of a well-worn theatrical business at a side wing (199). One of the multitude of little sprites, more learned as to the heels than the head,—fairies of pink tights, golden hair, and a season's creation and evanescence, that give a special interest to the boards—the London School Board included,—at pantomime time, is graduating by dancing steps to the degree of knowledge a pretty face and figure make so easy of attainment: an admirer has thrown her "Her First Bouquet." Mr. F. J. Skill's "Breton Children" (141) are not of the fairy order; a score of his examples give opportunity for a wide acquaintance with them here, but they are all (clever as they are) too much alike. "The Sisters" (2); "Morning—A Hayfield" (104); "Sunny Hours" (115); and "The Little Pitcher at the Well" (302) are amongst the best. Mr. W. L. Thomas's thirty sketches in one frame, made during "A Tour in the Pyrenees" (12), indicate a great appreciation of colour; and this is seen more convincingly in a little bit of home scenery, "Near Pett, Sussex" (5), to make it noticeable even when so many instances of a similar gift, applied to more learned workmanship, are to be found. Exquisite colour is the nominative charm of Mr. H. G. Hine's drawings: it would be difficult to simplify such object, as he makes subject enough in "Herring-boats, Eastbourne" (19), or indeed in any other of half a dozen pieces here; and yet, by his treatment, what is ordinarily visible with ordinary effects becomes quite new matter for admiration. Mr. E. Warren's single contribution, "West Dale Sands, St. Bride's Bay, Pembrokeshire" (202), looks

the more chilly and hard by reason, no doubt, of innate consequences to proper representation; a prevailing blue being one of them, and rocks —the antithesis of many things to be mollified, —another. The sun was kinder in the vicinity of "St. Mary's Isle, Northumberland" (179), enabling Mr. J. Mogford to streak his sea with puce and emerald shadows, besides lending such warm light to the rippled countenance of the "green one," or blue one, as makes it the more agreeable for those who do not like it much at most times. "Heave and Away" (36) comes in such expressive sequence, that one would just notice how well Mr. W. May points his advice by rolls of lumpy waves,—and take it! the more especially as his luggers, colliers, or whatever they may be, so far as a passing glimpse may show, have not many signs of comfortable cabins.

"St. Mawes, Cornwall" (96), by Mr. J. G. Philp; "On the Orwell" (112) and "Dawn" (220) upon Druidical remains, surrounded by the mist and mystery of old, by Mr. Harry Johnson; "Castle of Rheinfels, on the Rhine" (134), with a good deal of its romance about it; "Hills near Loch Awe—Twilight," by Mr. T. Collier (210); "Evening," and "Sunset" (224 and 241), by Mr. W. L. Leitch, with Mr. McKewan's clever depiction of what is out doors and in, are some of the leaders of many cognate works that form the bulk of this exhibition, to which Messrs. Fahey, Whymper, Maplestone, Hargett, Mole, Pidgeon, Reed, Telbin, Rowbotham, Mitchell, Orrock, Sherrin, and Small, lend such help as their names would promise. The promise of a name is seldom so well realised as in the case of Mr. E. H. Fahey. Unnaturally and naturally he beats his father and a great many more at the "Study of a Head" (22); but, then, he speaks very loudly of the valuable direction that could educe such forcible views of cottages, with wild tamed to cultivated garden-produce, in his "Sketch from Nature, Dorchester" (81), or more quietly and as soundly in the "Sketch from Nature, Groombridge" (180), or in that of "Cookham-on-Thames," which give in rich and deep tone a promise of even better things to come.

With apposite notice of Mr. Carl Werner's learned representation of the "Fountain of the Apostles between Jerusalem and Jericho" (78); Mr. T. H. Cromek's "Crypt of St. Peter's Church, Toscanella, Italy" (176), and Mr. L. J. Wood's pleasant Prout-like drawings of old Continental buildings, these remarks end with a question.

In observing the similarity of winter and summer exhibitions, is not the likelihood of the later show becoming too like the earlier, rather than *vice versâ*, a real cause for fear?

MR. PARKER'S LECTURES ON ROME.

Mr. J. H. Parker, C.B., M.A., Keeper of the Ashmolean Museum, at Oxford, has given two lectures in the museum. The first was on the results obtained by the recent excavations in Rome, as giving archæological evidence of the general truth of the old legendary history of that city as given by Livy and Dionysius; and the second was on the Tombs and Catacombs.

In the first, he commenced by observing that the excavations in Rome during the last few years had thrown quite a new light on the early history of the Eternal City, and had gone far to prove that the old legendary history of the foundation must be substantially true, if archæological evidence could be relied on, and he believed that it could for the main facts. The earliest wall in Rome in architectural character was the one at the north end of Palatine Hill, built against the cliff at the top. It was built of large blocks of stone, each 4 ft. long and 2 ft. thick, and the same width,—that is, oblong, or two squares united,—and each of a ton weight. These stones are laid alternately lengthwise and crosswise, and are supported by their own weight only, with very wide vertical joints between them. The wall can be traced around three sides of an oblong space at the north end of the Palatine: on the fourth side it is concealed by the remains of the palaces of the Cæsars. In the part immediately opposite to the hill of Saturn there are remains of towers against the cliffs and the walls. The northern side of this oblong space is a wide and deep fosse or valley, perhaps partly natural, but with vertical cliffs, supported in places by walls of tufa, as in all other parts. It is probable that the tufa stone used to build these walls was taken out of this fosse, which was at least partly made. He pointed out that this fortified oblong space was naturally the arx or citadel of the Palatine Hill as a separate fortress, such as settlers might be expected to make who had to defend themselves upon it against an enemy on the opposite hill. He thought they might fairly call this oblong space by the old name of Roma Quadrata. Behind the earliest part of the wall of Romulus, at the north-west corner of the Palatine, is a cave reservoir for rain-water, cut out of a soft bed of tufa, between two hard beds. This reservoir has conduits leading into it from different parts of the hill. In the hard bed of tufa which forms the vault over it are several wells for letting buckets down into the water when it was full. Under the same corner of the Palatine, but at a very low level, only just above the ordinary course of the Tiber, is a cave with a stream of water gushing out of the rock into it, the source of what is called the Aqua Argentina. This cave might very well have been a wolf's cave at the time of the foundation of Rome. On the top of the Palatine, in the same corner, during the year 1871, the foundations of a very early temple were found, with a grand flight of steps leading up to it from the direction of the Lupercal and the Circus Maximus. The construction of this is exactly the same as that of the wall of Romulus; and if they were to believe the legend, this could only be the Temple of Jupiter Feretrius, built in the year 4 of Rome, and the steps of Cacus (*scala Caci*), built about the same time.

Mr. Parker next proceeded to refer to the second wall of Rome, built after the peace with the Sabines, when the two hills were united, and the Hill of Saturn was made the Capitol of the united city. Of buildings of the first period there were very slight remains. The houses were all of wood for a very long period, probably for the first 700 years of Rome, or longer. The city of Rome burnt by Nero was a wooden city almost entirely, and even after that time the upper stories of the palaces were of wood. The Golden House of Nero himself was all on one level, vaulted over, and the vault covered with earth, upon which gardens and woods, and the thermæ of Titus, Domitian, and Trajan were made. Such a palace could not be burnt. The pavement of the old street is often now found in the cellars of the houses, at a great depth. Mr. Parker dwelt at some farther length on the structure of the buildings, &c., and concluded by saying that the magnificent buildings of the Empire were so numerous and so important in Rome that it was quite impossible that he could enter into the subject here. He had given a general sketch of the history of architecture in Rome, as historical evidence, as concisely as he could.

NOTES FROM RIO JANEIRO, S.A.

The Brazilians are decidedly peculiar in their acts of politeness. Meet a native acquaintance twenty times a day you must shake hands; no difference between male and female friends. Enter a room, the same process must be gone through. Smoking is quite fashionable, every room impregnated with tobacco-smoke; but chewing is discarded altogether. Coffee and light wines are always offered to callers, and they generally partake of them.

Intoxication is seldom seen, so far as your correspondent can judge; during nearly five weeks he never saw one drunken man. Every householder seems to be musically inclined; a piano I noticed in every house I called at. The wives of the business people I called upon seem to be slatternly and indolent, poor housewives; and the business people have peculiarities in regard to meals. The servant brings a cup of coffee to your bed, then you rise, go to business, work until eleven o'clock, breakfast, return to work, and then have a good square meal between five and six; one good meal a day is the general household "fixing." The better half of a well-to-do Brazilian rises about nine, remains in her dressing-gown until time to "fix up" for dinner. The women are not handsome—of a tawny complexion, coarse featured; but have wonderful eyes. There are a great many coloured (negro) folks in Rio, who, unlike those of the United States, mingle together in company at the opera or receptions; and for the first time during my stay in America, I came across a real coloured mechanical professional: the chief engineer and constructor of works, whom I had business with, was a negro. Rio has no buildings to boast of, except cathedrals; lots of indifferent *cafés*, but no real decent hotel; and if a joint-stock concern wish to make money, let them "go for Rio," and build an American or European hotel. Rio has lots of public gardens, parks, and sea-side promenades. The Botanical Garden, about four miles from the city, has one of the finest avenues of palm-trees I have ever seen: those beautiful trees, stretching out their big leaves, make the walk a pleasant place in the hot sun. Fancy an avenue of tapering palms, about 70 ft. or 80 ft. high to the first branch, and in the centre of the avenue is a splendid fountain.

Rio has a very modest English church; as, also, one for the Presbyterians (I think for the American), the Roman Catholic faith predominating, whose cathedrals are very fine. There is no Sunday kept in Rio. Horse-racing, theatres, and the shops are in full swing, and more retail trade seems to me to be done on Sunday than any other day; the only difference I could see was a few more clean shirt-fronts exposed.

Only one railroad runs out of Rio, but the place is lined with coasting and foreign steamers. In regard to hotel accommodation, I learnt that the wholesale dealers generally provide sleeping accommodation for their country buyers.

The second Sunday I spent in Rio I must plead guilty to witnessing a horse-race, and had the honour of seeing the Emperor and the royal family. Don Pedro Secundo is about a 6 ft. well-proportioned gentleman, genial and oval face, full beard, half black and half grey, dresses in simple black. My acquaintances say his donship is given to much study, and rather an advanced philosopher.

Monopolies seem to me the order of the day in Rio. One concessionist monopolises all the cartage for supplying the city with water. Another necropolises the burning of the dead, for the dead must not remain out of the ground longer than six hours.

Slavery exists in Brazil, though in a somewhat modified form. Hereafter, children born of slaves will be free; so death to slavery will take place in the next generation. My business in Brazil took me a greater part of the time among the planters, and the slaves appeared to me to be treated very harshly, working from daylight to dark, neither age nor sex seeming to be of any consequence. Probably the sugar-making season being on hand brought great pressure to labouring hands. Carrying loads is quite a curiosity; everything is done on the top of the cranium, from a sheet of paper to a piano,—the women carrying just as heavy loads. The amount of dress is also scanty,—an old canvas sack ripped open at the bottom and two holes for the arms, or a pair of overalls.

The country around Rio is mountainous, abrupt, and admits of very little culture; to get into the interior must be done by mule exercise.

The fashionable resort is the town of Petropolis, about thirty miles from Rio. The route is by steamboat some twelve or thirteen miles, by rail five miles to the foot of Seirao, thence by diligence to the top of the mountain, some 4,000 ft. The road up the mountain reflects great credit on its constructor: it is zig-zag in its formation, and one is compelled to go a dozen miles to get to a three-mile point. The scenery up the mountain is magnificent and beyond description, but the air becomes rarified, and it is hard work to breathe much. A diligence with four persons takes as many hours to ascend the mountain, and requires the aid of six mules. Petropolis is the resort of the Emperor in the very hottest months of the year; it is situated in a little valley on the top of the mountain, and contains about 3,000 persons.

The Emperor's Palace is a large building, void of architectural beauty, but the grounds are in the very highest state of culture, and adorned with everything beautiful in the horticultural line.

The slaves of Brazil seem to me a poor, emaciated kind of creature,—very obedient, and scarcely one passed me but his hat was taken off and a most obedient bow made, and muttering of a few words followed, which, interpreted to me, was "*Praise be the Lord. Your blessing, master.*" Slaves are allowed to work for themselves, provided they pay their master about one dollar a day and support themselves: so by that means many from their savings are able to free themselves in a measure.

Hat-making is learnt by every negro:—at corners, garden fronts, and out-of-the-way places the coloured people seem to use every spare minute in braiding palm-leaf plaids for hat-making, which they afterwards sew together,

and construct the hat. Sickness is not very prevalent, but the Yellow Jack fever is often a visitor,—not more so, I am told, than in other parts of Southern America.

Altogether, my visit to Rio Janeiro was one of extreme pleasantness, and now that I am settled down for a short time in my old bachelor quarters in the Northern part of the United States, I hope these few jottings of a wanderer will not be altogether uninteresting to the readers of the *Builder*.

QUERCUS.

VENTILATION AND THE FACULTY.

SIR,—In an interesting paper "On the relative frequency of disease between the right and left sides of the heart," by Dr. Black,—published in the *Lancet*,—the following passage occurs:—

"Architecture has much to undo, much to learn, before it can satisfy the simple laws of nature. In ignorance of these laws houses are built, stately edifices erected, and no thought or care is taken to render the air within as pure as the air without. It is nevertheless easy to accomplish this desideratum, but blind unyielding ignorance claims death in every room."

No greater benefit could be conferred on mankind than the teaching them the necessity of ventilation, but that lesson is more likely to be learnt if it comes from the doctor than from the architect.

I think Dr. Black rather underrates the difficulty.

When there are both lighted gas and a fire it is easy; a hot chamber-stove supplied by fresh air from without will give a sufficiency of warm air, and one of Rickett's ventilating gas-burners will remove the carbonised air; but to apply this to a single room will cost from 30*l.* to 50*l.*, and few persons are willing to incur this expense. In addition to this, when there is only a fire without gas burning, the cold air is apt to come down from the ventilating tube of the gas-burner.

In houses already built, where gas is not burnt, it is difficult to get rid of the carbonised air; the smoke that comes through Arnott's valves so blackens the walls and ceilings that the valves are not unfrequently removed; and in bedrooms where there is neither fire nor gas simple ventilation by means of gauze or finely-perforated zinc is generally pasted up. To supply the whole house with warmed air, and to remove the carbonised air, requires a more or less costly apparatus, which is generally objected to on the score of expense, and which is still more costly and troublesome to execute if required for a house already built. Where an architect proposes any system of warming and ventilation, the reply usually is that the owner "is perfectly satisfied with an ordinary open fireplace and sash windows, and that he does not see the necessity of going to the expense of other means of ventilation which he understands does not generally answer."

Severe colds in the head and an increased outlay are tangible evils, while the gradual deterioration of health by living in ill-ventilated rooms is looked upon as a visitation of God.

It must not be forgotten that hitherto ventilation has been usually a failure: the costly mistake of the House of Commons is one grand stand-point of objection.

In the first quarter of this century the subject of ventilation attracted much attention, but the practical promoters were so incapable of applying it satisfactorily that people became disgusted with the expensive failure, and as no serious injury was known to be caused by the want of ventilation, all attempts to secure it were abandoned. Architects can only be supposed to know the immediate inconvenience of the want of ventilation, and not its ultimate effects on the human frame.

If my recollection serves me, in a paper on "Railway Travelling" in the *Lancet*, we were informed that greater evils resulted from persons catching cold (by having the windows of railway-carriages open) than by the diminished circulation caused by the carriages being unventilated.

A very large room in the city of London, that was built about the year 1828, was put into the hands of Dr. Arnott to warm and ventilate. On his failure, the schemes of Walker, Perkins, and others were tried, and all without the smallest success; the constant complaints of the clerks who were annoyed by the hot air, and of those who got colds and rheumatism in the head from the cold air coming in where the hot air ought to have gone out, so annoyed the secretary that at last the ventilators were blocked up, and the clerks who complained of cold were supplied with hot-water tins for their feet.

I have seen dozens of cases in bedrooms where the perforated zinc or gauze was blocked or pasted up, which had originally admitted fresh air. My last experience of drainage and ventilation as applied to a stable may be instructive. An old stable was altered. Light was admitted at the dark end by a large shaft, the soaked soil was removed, the whole stable concreted, the floor paved with adamantine clinkers, the stable-drainage carried on the surface to the outside, the warming was obtained by means of hot-water pipes in the coach-house communicating with the stable, the ventilation by means of one fixed open louvre at the top of the light shaft, by a perforated zinc tube over the mangers leading at both ends to the open air, and by an impervious pipe also open to the air at both ends supplying air to perforated plates under the mangers. The stable was no sooner occupied than the surface-drains were removed and the stalls drained by horse-pots into the general soil-drain, and directly the cold weather set in the fact of one horse having a cold was sufficient to cause the owner to have the ventilator in the light shaft permanently closed, and both ends of the other ventilating pipes blocked up.

Until the faculty can convince people that their life is shortened and serious diseases are brought on by want of ventilation, architects have no chance.

GEORGE AITCHISON.

THE LEEDS SCHOOL-BOARD.

A DIFFICULTY has arisen between the Educational Department of the Government and the Leeds School-Board in respect to broad and narrow plans. The nature of the difference will be seen, if we quote from one of the letters from the Educational Department respecting a set of the plans in question, which the local Board purposely required the architects to prepare on the broad system:—

"Their lordships' architect reports, 'These plans are very unsatisfactory. All the principal schoolrooms are 30 ft. wide, and from 45 ft. to 49 ft. long only. The class-rooms have in most cases their fittings placed so that the children would have their backs to the light, and both school and class room are so crowded with fittings that teachers would find great difficulty in managing the classes; the chief point, however, to object to is the wide school-rooms. I wish to add that the design is most unnecessarily extravagant.'"

Sir Andrew Fairbairn (chairman of the Board), Mr. Beckworth, Mr. Gaunt, Mr. Long, Mr. Kendall, and Mr. Woolley, have been appointed a deputation to wait upon the vice-president of the council relative to the demur of the Department to approve the plans of the Board on the ground of the width of the principal school-rooms.

REBEKAH.

IN catering for the tastes of their subscribers, the council of the Art-Union of London, whilst generally successful in producing good art, are, apparently, anxious to vary, as much as possible, from year to year, the subject of the work provided for general distribution; thus having for last year engraved a series of plates of "Coast Scenery," from drawings by deceased British artists, they give us this year a work of a totally different character,—"Rebekah," from the fine picture by F. Goodall, R.A., very well interpreted in black and white by the late William Holl.

Who does not know the charming and graceful picture, by Horace Vernet, treating the same subject? It may, perhaps, be allowed that there is something in it rather more theatrical in the action, where the damsel balancing the water-pitcher on her right arm, proffers its mouth to the thirsty messenger, than in Mr. Goodall's more simple and homely reading.

There is, to be sure, far more scope for sentiment in the latter picture, seeing what a revolution of feelings has taken place, in the few minutes intervening between the incidents depicted, in the bosom of her who was destined to be the "mother of thousands of millions." In the former, Rebekah merely sees an ordinary dusty and wayworn traveller, who begs for water for himself and his camels; in the latter she is being asked to be the wife of her father's brother's son, of the possessor of "flocks and herds and silver and gold;" she sees an immediate escape from a single life, ever held as a kind of disgrace by the daughters of Judea; and we may assume that she had some sort of divine inspiration teaching her the destiny awaiting her descendants, that "in her seed should all the nations of the earth be blessed."

The artist has happily caught the expression of these varying emotions in the maiden's face, while the man, proceeding to place the bracelets on her wrist, "wondering at her, held his peace; to wit, whether the Lord had made his journey prosperous or not." This touching representation of an event of such vast importance in the great scheme of human redemption must have a high interest for all believers; and, whilst tending to lead to solemn and momentous thoughts, it is conceived and rendered with artistic grace and beauty. We cannot but endorse the anticipations of the council that "the plate will meet with great success."

PROPOSED FLOATING BATHS ON THE THAMES, AND THE PURIFICATION OF THE RIVER.

AT their meeting last week, the Corporation took the preliminary step towards the establishment of floating-baths on the Thames for the use of the inhabitants. Mr. Deputy Stapleton said it was highly desirable that the Corporation should construct and maintain baths of this character in the interests of the health of the citizens, and in support of a proposal to that effect he remarked that there were only twenty-four public baths in London, most of which were very limited in size, and totally inadequate to the sanitary requirements of the population. He suggested that large floating-baths, not less than 150 ft. long, and 40 ft. wide, should be stationed at various parts of the river, and added that it was not necessary to wait for the purification of the water, inasmuch as there was a process by which it could enter the baths filtered. He moved a resolution to the effect that it be referred to the General Purposes Committee to inquire into the cost of construction and the probable annual outlay for maintenance, with power to confer with the Thames Conservancy Board, and to report generally on the subject. The motion having been seconded, it was objected by one or two members that the proposal was premature, and that the construction and maintenance of baths was not an appropriate task for the corporation to undertake. The feeling of the members generally was, however, warmly in favour of the proposal, and in the course of the discussion Mr. Bedford incidentally observed, that in three months the whole of the sewage of the City would be intercepted, and that the river would probably then be as pure as it would ever be. Mr. Stapleton's motion was ultimately carried, after several members had spoken in its favour.

HOLDENHURST CHURCH, HANTS.

THE Church of St. Swithin, Holdenhurst, near Christchurch, Hants, has been enlarged by the addition of a chancel, with apse, and a vestry. The body of the church has also been reseated. The building to which these alterations (built some thirty-five years since) have been made consisted of a nave, 28 ft. 6 in. wide, with a recess, serving for a chancel, and a south transept. The vestry, &c., were at the west end, and over them was placed a gallery. This arrangement has been abolished, the gallery pulled down, and the font now stands where the staircase formerly was. Owing to the limited site available at the east end, it has been impossible to make the total length of the chancel more than 18 ft., the width being 14 ft. The walls are mainly built of Swanage stone, with Box-ground Bath quoins and dressings externally, and Corsham Down internally. The timbers of the open roof are of fir, and the external covering is Bangor slating. The body of the church has been seated with low, open, deal, stained benches, with shaped ends. The chancel seats are of wainscot, with open pierced book-board fronts. The pulpit is of oak, the upper panels being perforated: the base is of Bath stone. The nave passage is paved with Maw's 4½-in. red and chocolate tiles, laid diagonally in ornamental patterns. The chancel is laid with encaustic tiles, those within the sanctuary being of richer design than the others. All were supplied and laid by Messrs. W. B. Simpson & Sons, Messrs. Maw's London agents.

The reredos (executed by Mr. J. L. Jaquet, of London) is composed of brown alabaster, dove marble, yellow Mansfield stone, and marble inlay. A variety of curious pieces of mosaic, marble, and stone, collected by the vicar, from Italy, the Holy Land, and elsewhere, have been worked into the design. The church is warmed by one of Porritt's underground stoves. All the windows in the chancel are filled with painted glass, by Messrs. Lavers, Barraud, & Westlake. The total expense of the work amounts to upwards of 1,000*l.*, the whole of which has been borne by the vicar, the Rev. F. Hopkins. The contractor was Mr. J. Landen, of Burton, near Christchurch. The architect was Mr. Ferrey, F.S.A.

OBITUARY.

THE LATE MR. R. R. BANKS, ARCHITECT.

We record with regret the death, on Saturday, the 14th inst., at his residence, Dulwich Wood Park, of Mr. Robert Richardson Banks (of the firm of Messrs. Banks & Barry), aged 59. Mr. Banks, had been the partner of Mr. C. Barry since the year 1847, and was, before that, nine years an assistant in the office of the late Sir Charles Barry, who had, justly, the highest opinion of his ability and integrity.

THE LATE MR. WILLIAM SLATER.

With equal regret we mention the death of Mr. Slater, of the firm of Messrs. Slater & Carpenter, which took place on the 17th instant, from complete prostration of strength, caused by a complication of diseases, from which he had suffered some years. The end was most unexpected at the last, but his partner and friend was able to be with him. The partnership in this case,—and it was the same with Messrs. Banks & Barry,—was not merely a business arrangement, but one of mutual pleasure and satisfaction. We may have more to say at another time of both these estimable men, and able architects.

LONDON CITY MISSION COMPETITION.

New official premises being required for the London City Mission, the committee invited Messrs. Spalding & Knight, Messrs. Searle & Sons, Messrs. Habershon & Pite, and Mr. Bell, to send in designs; the three architects not employed to be paid 15*l.* each for their designs, then to be considered the property of the society.

The maximum cost of building was limited to 7,000*l.*, this sum to include the extension of the vaults and footway required, stoves, bell and gas fittings, speaking-tubes, and arrangements for warming, ventilation, and carrying off gas by zinc tubes; the building to be constructed of brick, with stone dressings.

The design was to include a large-sized room for storing and distributing Bibles, tracts, &c.; a lecture-hall, to seat from 400 to 500 persons; and a library to hold the books lent out to the missionaries, with a capacity of about 30 ft. by 20 ft.

Designs having been submitted, the committee have just now decided in favour of Messrs. Spalding & Knight. The chosen design is in the Italian style, with a façade of brick and stone, and is to be erected forthwith upon a prominent site in Blackfriars, opposite the Ludgate Railway Station,—a part of the former site of Radley's Hotel and the Bridewell.

THE LONDON SCHOOL BOARD.

On the recommendation of the Works Committee, it has been resolved that the tender of Messrs. Henshaw & Co., of 13 to 15 Wharfs, City-road Basin, amounting to 5,285*l.*, for the erection of a school providing accommodation for 707 children, on the site on Eel-brook-common, Chelsea, be accepted; that the tender of Mr. W. Shepherd, of 101, Bermondsey New-road, S.E., amounting to 6,250*l.*, for the erection of a school providing accommodation for 878 children, on the site in Woodpecker-road, Greenwich, be accepted; that the tender of Messrs. L. H. & R. Roberts, of 34, Rheidol-terrace, Islington, N., amounting to 6,370*l.*, for the erection of a school to provide accommodation for 830 children, on the site in Blundell-street, Islington, be accepted; that the tender of Messrs. Henshaw & Co., of 13 and 15 Wharfs, City-road Basin, amounting to 8,975*l.*, for the erection of a school to provide accommodation for 1,388 children on the site in York-road, Finsbury, be accepted; and that the tender of Mr. G. S. Pritchard, of 108, Paul-street, Finsbury, E.C., amounting to 6,144*l.*, for the erection of a school to provide accommodation for 1,127 children, on the site in Hamond-square, Hoxton, be accepted.

PADDINGTON BATHS AND WASH-HOUSES.

A limited competition of nine architects was resorted to in order to obtain a design for this building. The Commissioners met on Tuesday last, when they awarded the first premium, of 100*l.*, to Mr. Lewis H. Isaacs, of Verulam-buildings, Gray's-inn; the second, of 75*l.*, to Mr. H. H. Collins, of Queen-street, Cheapside; and the third, of 50*l.*, to Mr. Bridgman, of London-wall. Mr. Isaacs is to be instructed to prepare the contract drawings forthwith. The estimated cost of the building is 20,000*l.*

THE COST OF THE FOREIGN CATTLE MARKET.

PROPOSED ADDITIONAL BUILDINGS.

At their meeting, last week, the Corporation complied with a recommendation of the Cattle Markets Committee for the raising of a further sum of 20,000*l.*, for the payment of 14,000*l.* which had been incurred in excess of 210,000*l.* already granted for the construction of the Foreign Cattle Market at Deptford, leaving the balance of 6,000*l.* for such other works as might be necessary; and it was stated that this last-named sum would probably be required for the erection of additional slaughter-houses.

OXFORD IN THE RECENT GALE.

The damage done at Oxford was more extensive than last week's accounts indicated. According to the local *Journal*, at Christ Church, about 90 ft. of the parapet of the Deanery were blown on to the lead roof, which was severely damaged thereby. A small portion of the parapet adjoining "Tom Tower," in St. Aldate's, was also blown down. At Magdalen College, the pinnacle and weather-cock on what is known as the Founder's Tower were blown off, as were also the top of a chimney in the Chaplain's Quadrangle, and some battlements from the president's house. A portion of the end wall of a house, situate in New Inn Hall-street, fell. The end wall of a house in the parish of Cowley St. John also fell. A portion of one of the small pinnacles of St. Mary's Tower was blown off, but no damage was done to the church. Some ornamental work on the wall in front of Pembroke College was blown down, as was also some from the Independent Chapel in George-street. About one hundred-weight of lead was blown off from the roof of a house in Isis-street, St. Aldate's. Four brick walls in the front gardens in Prince's-street, St. Clement's; one in William-street, Cowley-road; one in Iffley-road; and one in Observatory-street, St. Giles's, were blown down. A square of glass was blown out of the roof of the Corn Exchange. In Church-street, South Hinckesey, the gable end of a house fell in while the occupants were in bed. All escaped. Two garden walls were also blown down. Many fine trees have been destroyed, and chimneys and roofs damaged.

THE PROVIDENT INSTITUTION SAVINGS BANK NEW BUILDINGS.

An extensive block of new buildings for the Provident Institution Savings Bank has for some months been in course of erection at the corner of St. Martin's-lane and St. Martin's-place, immediately facing Charing-cross, and are now externally approaching completion. The structure contains two main frontages, the principal façade facing Charing-cross, and the other elevation being in St. Martin's-lane, with an entrance frontage at the angle of St. Martin's-lane and St. Martin's-place. The height of the building from the street level to the main cornice is 42 ft. 6 in., above which is a balustrade resting on a plinth. The elevation facing Charing-cross is 60 ft. in length, and contains two stories and dormers in addition to the ground-floor. The material used in the external construction of the building is Portland stone. The ground-floor, up to the base of the first-story windows, is rusticated. The windows of the ground-floor are circular-headed, with carved figure-headed keystones, and coved recesses. At the base of the first-story windows, immediately under which a cornice runs across the elevation, there are sunk and moulded panels, the windows on each side having ornamental fluted pilasters, with carved capitals, and architraves, surmounted by pediment heads. The second-story windows are of a more simple character, without any attempt at ornamentation. Above the second story there are five dormers in the roof between the balustrades, which are of a bold and prominent character, and materially add to the architectural attractiveness of the elevation. These windows vary in construction, being alternately pediment and circular-headed. The St. Martin's-lane elevation, which is 40 ft. in length, is uniform in construction with the Charing-cross frontage. The principal entrance to the bank premises is at the St. Martin's-lane and St. Martin's-place angle, the first-floor window over the doorway being circular-headed, whilst on each side of the dormer window above, uniform with those in the two main elevations, there are ornamental finials.

The business of the bank will be conducted on the ground-floor of the building, which, in addition to the general office or banking premises, a large apartment, 46 ft. in length by 32 ft. in width, also contains vestibule or entrance-hall, secretary's offices, strong-rooms, and other conveniences.

That portion of the premises immediately over the banking department, from the ground-floor to the top of the building, is entirely open, and the bank will be lighted by a square lantern above.

The first floor, which, with the rest of the building, is approached by a private door and staircase in St. Martin's-lane, will be exclusively set apart for the directors and board of management, and will contain the board-room, ante-room, and offices; whilst the second floor and dormers above will contain a full suite of apartments for the manager's residence.

The cost of the building, exclusive of the land, for which a large sum was paid, will be upwards of 10,000*l.*

Mr. D. Brandon, of Berkeley-square, is the architect; and Messrs. Brass & Sons are the contractors.

LIGHTNING CONDUCTORS.

Notes on "Some Phenomena produced by Lightning," published by Father Secchi, in *Les Mondes*, are quoted in the *Telegraphic Journal* of the 5th inst., and deserve the attention of those who are engaged in the protection of buildings from the effects of lightning. Father Secchi writes:—

"Eight years ago some lightning conductors had been erected under my direction on the cathedral and on the Bishop's Palace of Alatri, situated at the summit of the Acropolis of that town, which, by its elevated and solitary position, was exposed to frequent ravages from storms. It was not long ago that a flash of lightning demolished a great part of the belfry, and damaged the organ of the church. In the erection of this lightning conductor there arose a great difficulty proceeding from the nature of the soil, which at the depth of some centimètres turns out to be entirely of solid calcareous rock.

In order to remedy this defect, that part of the conductor which enters the ground has been made very long, more than 4 mètres, and has been provided with a great many couples of points, 5 centimètres broad, 5 millemètres thick, indentated on the edges, with the addition of a thick copper wire twisted among the same points, to help to multiply the points of contact between the rod and the carbon. The foot of the lightning conductor is entirely of copper; the rod is also of copper up to a mètre above the ground, and there it is joined to the iron conductor in the ordinary receptacle made in the heart of the wall to preserve it from disturbance at the inferior parts. The ditch, into which the foot of the lightning conductor has been sunk, is 5 mètres long, 0·60 mètre wide, and it was dug until it came upon the roots of some neighbouring trees; a layer of cinders was then placed to a height of 20 centimètres, which extended over the whole lower surface of the ditch. Thus the surface of contact between the metal and the carbon and of the latter with the soil, was such that one would suppose it to

be more than sufficient, and the presence of trees, although they were not large, raised the hope that there would be always enough moisture. Moreover, as the edifice had two culminating points, viz.—the belfry, and the hinder portion of the choir, two rods were placed with points and feet, and the two rods have been joined together on the roof by a conductor, so that, in the case of a discharge on one of the points, the lightning would find two ways for spreading itself in the soil."

These precautions produced a good result, since in this interval the tower having been struck at least four times, the edifice has sustained no damage. Water-pipes, at some distance from the foot of the conductor, however, were destroyed, and of the circumstances attending this, the writer gives an account, drawing the obvious inference, that it is necessary to devote great attention in the erection of lightning conductors; that we must allow them a large surface for discharge; and that there can never be too much of it. The surface of the foot of this lightning conductor was certainly superior to what has been judged sufficient by Matteucci for the discharges of telegraphic conductors, and yet it has not sufficed. Further, it is a confirmation of the necessity of making the neighbouring metallic masses communicate, and especially with water-pipes or gas-pipes.

BELFAST ARCHITECTURAL ASSOCIATION.

A MEETING of this society was held at the Museum on the 9th inst., Mr. Thomas Turner in the chair.

A paper was read by Mr. Samuel P. Close, on "Measured Drawings," showing the advantages to be gained by the measuring up, and close study of, good examples of ancient architectural work. The paper was illustrated by a large number of drawings.

Some of the members present added to the interest of the evening's proceedings by discussing various matters connected with the subject.

SCIENTIFIC AND MECHANICAL SOCIETY MANCHESTER.

THE adjourned half-yearly general meeting of this Society has been held. From the half-yearly report it appears that the receipts had risen to nearly three times the amount of the preceding session. The report was adopted, a new set of rules and bye-laws agreed to, and the following gentlemen elected to form the council:—

President: Sir W. Fairbairn, bart., C.E., LLD., F.R.S., &c.

Vice-Presidents: Professor O. Reynolds, M.A., C.E., Owen's College; H. W. Harman, M.I.M.E., A.I.C.E.; J. Shepherd, C.E.

Treasurer: Charles S. Allatt, M.E.

Hon. Secretary (re-elected): A. Hildebrandt, C.E.

Members of the Council: W. Bowker, M.E.; F. C. Lynde, M.E.; R. L. Messager, C.E.; C. J. Allport, M.E.; J. C. Edwards, M.E.; A. Ross, C.E.

The next meeting was to be held on (this) Saturday, at the Trevelyan Hotel, to receive the inaugural address of the president, who would afterwards be entertained at dinner.

A NEW POST-OFFICE FOR WOLVERHAMPTON.

ON the south side of Queen-street, nearer to the centre of the town than the site of the old office, a new Post-office building has been erected. It has been designed by Mr. T. Williams, the architect for the new buildings of the General Post-office, in London. It may be described as Græco-Italian, with a frontage of 48 ft., and an elevation of over 60 ft., in which there are three stories, and a basement. In the lower story there are two doors, with two windows opening between them. Beneath the sill of the window at the east end will be the slits for receiving the letters and papers. The first and second stories have a range of four window-openings to each. The first-floor windows are pediment-headed. Surmounting the building is a cornice and balustrade parapet, not unlike those of the Oxford and Cambridge Clubhouse, in Pall-mall. A moulded balustrade string-course divides the ground from the first story, and an enriched string-course the first from the second story. The whole of the front is built of Hollingston stone. By reason of the line of frontage, there is an open pavement-space in front. The public will enter by the west door, into a lobby, with glass doors, inscribed and indicating the post-office, money-order department, savings-bank, and telegraphic departments. The post-office proper is an apartment 35 ft. in length by 23 ft. in breadth, and 13 ft. in height. Extending from this room is the office in which the mail-bags are received and made up, and the letters are assorted. It is 60 ft. in length by 30 ft. in breadth, and from the floor to the raised skylight that runs the whole length of the room the height is 25 ft. From this office there is a way into the mail yard, between the building and Castle-street.

The doorway at the east end of the front will lead to the post-master's office, on the ground-floor, and, by a stone staircase of four flights, to the first and second stories. The first story will be devoted to the business of the inland revenue department; and the second, to the practical business of the telegraph department. In a well-lighted, spacious room, running the whole length of the front of the building, on this second floor, eleven telegraph clerks will receive and despatch the telegrams by forty-seven wires.

In respect of Post-office accommodation, Wolverhampton is now considered to be equal to Sheffield, Nottingham, and Derby. The contractors were Messrs. Parnell & Son, of Rugby. The new office has just been opened for the use of the public.

THE PROFESSIONS AND SANITARY REFORM.

SIR,—The perusal of a suggestive article in the last number of the *Builder*, entitled "The Hitch in Sanitary Reform," leads me to inquire whether, in the writer's very just estimate of the equal necessity for the scientific engineer and the skilled medical officer of health in sanitary administration, he may not have somewhat misapprehended the line taken by the leaders of the progressing medical movement against Mr. Stansfeld's blundering attempts at legislation and administration.

To a certain extent, as that writer alleges, the object of this movement is professional,—so also is *his* object. But I might easily adduce many proofs of the breadth of view taken by sanitary reformers in advocating the proper official employment of engineers and architects.

1. To quote the Report (1871) of the *Joint Committee* of the British Medical and Social Science Associations, a body more than three-fourths of which are medical men:—

"(§ 18.) The last important reason which we shall adduce for *wider* administrative areas is, that they would supply a superior machinery for the appointment of scientific officers, whether medical or *engineering*, of high and special qualifications."

Again (§ 40):—"In every such (inspecting) circuit, it might be advisable, for efficient administration, that the central authority should act through three inspectors with different qualications—one legal, *one engineering*, and one medical or scientific."

2. Mr. Michael, the legal secretary of the Joint Committee, in an able paper read at Plymouth, recommends for each principal district the appointment of three officers,—the clerk, as legal adviser and public prosecutor; the skilled surveyor, as engineer; and the specially-trained medical officer of health.

3. In my recent "Summary of the Principles of a Comprehensive Measure for the Improvement of the Sanitary Laws" (§ x. *Special Qualification for Chief Officers*), I urge that "this true safeguard of administration should apply to engineers, surveyors, public analysts, officers of health, and medical jurists"; and I say (§ xix. *Inspecting Circuits*),—"To each of these circuits should be appointed one legal, one medical, and one *engineering* inspector."

I might multiply such references, but it is needless; for the establishment of a complete scientific machinery is the demand alike of the whole educated community, of the learned professions, and of a suffering people.

Mr. Stansfeld's greatest error has been his acceptance, on political grounds, of the fanciful theory, that local and union Boards, which were constituted for other objects, and which have fully proved their incompetency for, and their indifference to, sanitary action, may be trusted "to rise to the height of their new functions." As the writer in the *Builder* very truly says respecting this self-education of local Boards for duties of urgent and immediate necessity,—"Time is enlisted on the wrong side."

But now that a visionary and fallacious principle has been adopted in the formation of sanitary authorities, the main point to which public attention ought to be directed is the necessity for a high and special qualification for officers. I saw, therefore, with pleasure an advertisement in the *Builder*, of October 5th last, giving notice that the Royal Institute of British Architects would grant a *certificate of competency* for the duties of District Surveyor under the Metropolitan Buildings Act, to any candidate who passed a two-days' examination, written or oral, to be held at the Rooms of the Institute. The value of such a diploma would be greatly increased if the Institution of Civil Engineers were associated with that of architects in an examination which should be required for the office of District or County Surveyor throughout England.

No one who has critically observed the execution of so-called sanitary improvements, can doubt that a number of very incompetent surveyors are employed,—men whose knowledge, whether of engineering or architecture in the sanitary department of those arts, is lamentably defective. The extravagant blunders that have been made, the useless and even positively injurious works that have been constructed, at enormous waste of time, labour, and money, show that in future no one ought to be permitted to direct great sanitary undertakings without having gone through special study, training, and examination. That system is utterly unreliable which commits the selection of such officers to local Boards, of easy virtue, unguided by authoritative certificates of qualification, and liable to be swayed by piles of amateur testimonials.

While urging these considerations upon the professions represented in the *Builder*, I cannot avoid remarking that the scientific basis of every measure for wholesome alimentation, for water-supply, for the removal of refuse and *excreta*, for drainage, for ventilation, and for house-construction, was in the first place laid down by the physiologist, the pathologist, or the physicist; and that the precise cause of injury to health, through defective or badly-constructed works, has been generally detected by the medical expert, *e.g.* in the recent inquiries at Londesborough Lodge.

The history of the ætiology of disease must not be forgotten. It places indisputably the *medically*-educated philosopher in the van of the sanitary movement. We may, nevertheless, fully admit that the principles of sanitary architecture and engineering must be worked out scientifically by architects and engineers; just as the skilled analysis of air, water, and food, must be committed to chemical and microscopical experts.

Captain Douglas Galton, R.E., C.B., F.R.S., has stated the relative position of the two professions very clearly in his remarkable address at Leeds on the construction of hospitals. "My part," said he, "has been to endeavour to show how the architect must shape his building so that it shall be in accordance with what the physician has declared to be necessary.

HENRY W. RUMSEY, M.D.

OPENING OF THE NEW CONVALESCENT HOME AT SALTBURN-BY-THE-SEA.

WE now give a few particulars in addition to the announcement we made of the opening of this institution. The Pease family have not only defrayed the entire cost of the new building, amounting to upwards of 12,000*l.*, but will also be at the whole expense of its continued maintenance for the injured and sick amongst their workpeople. The services of Mr. Thomas Oliver, of Newcastle, the architect of the Prudhoe Memorial Convalescent Home, at Whitley, having been secured, and a design adopted, not altogether on the plan of the Prudhoe Memorial, at Whitley, but somewhat after the celebrated Convalescent Home at Vincennes, a contract was entered into in 1870, and the works have been pushed forward since that time. The site selected is on an elevated situation, with easy approaches to the sea-beach, and facing more immediately into the Hazel Dene Valley. It is dry, comparatively protected and warm, and with cheerful views from the principal fronts. The outline is broken into distinct groups, the horizontal lines at intervals by the transverse

lines of the gables and the central block, which is raised above the whole of the other blocks, and from the middle of which springs a clock-tower, terminated by a truncated roof. The style of architecture adopted is domestic Gothic, freely treated, and the materials employed throughout are white brick, with warm cream-coloured stone dressings. Green Westmoreland slates have been used for the whole of the roofs, and the ridges are finished a deep red colour. The groups of chimneys, which have ventilating-flues attached, form a conspicuous feature in the elevation.

The frontage of the building is about 200 ft. long, the building itself being formed in two parallel lines reaching about 100 ft. from front to back, the front line being appropriated to the patients, while the back is appropriated to kitchen offices, wash-house, laundry, and such-like purposes. The whole of the walls have been built hollow; the floors of the corridors are of coloured tiles in artistic patterns, while the floors of the dormitories, day-rooms, and sick wards are laid with pitch pine. The staircases are all of stone, and practically the building is fireproof. The encaustic tile pavements have been laid by Messrs. Minton, Hollins, & Co., of Stoke-upon-Trent. Over the large central window, and filling in the spandrels, are carved busts representing Faith, Hope, and Charity. These have been executed by Messrs. Burstall, of Leeds, who also executed the carving throughout. The building is approached by a raised stone terrace. The fittings generally in the sick wards have been furnished by Mr. Jennings, of London.

Accommodation is provided for fifty patients. The warming is secured by open fireplaces, with Gill backs which supply warm air from openings in the front of the grate; and the ventilation is secured by means of these stoves, as well as by Sheringham valves, for the inlet of fresh air, and ventilating flues in connexion with the fire flues for the outlet of the foul air.

The furniture has been executed by Mr. Sopwith, of Newcastle, from designs furnished by the architect. Messrs. Robson & Son, of Darlington, were the sole contractors for the building works; and Messrs. Walker & Emley, of Newcastle, for the engineering works. The sub-contractors were as follows:—For the carpenters' and joiners' work, Messrs. Bridges & Robson, of Hartlepool; for the plumbers' and gas-fitters' work, Mr. Johnson, of Darlington; for the plasterers' work, Mr. Ormerod, of Carlisle; for the ironfounders' work, Messrs. Walker & Emley, of Newcastle; for the painters' and glaziers' work, Mr. T. C. Tomkins, of Saltburn. Mr. R. Robinson, of Darlington, was clerk of the works.

THE NEW ADULTERATION ACT.

The new Act, to which we have already referred on several occasions, gives power to the courts of quarter sessions and town councils in England to appoint analysts of all articles of food and drugs, and these bodies are compelled to appoint the analyst when called upon to do so—in England, by the Local Government Board. The analysts having been appointed, the local authorities are to employ the inspectors of nuisances, of weights and measures, or of markets, to procure samples of suspected articles and hand them to the analyst to be analysed. Should the analyst certify that the articles are adulterated, then the inspectors will make a complaint before a magistrate, who will thereupon issue a summons.

The offences and punishments are as follow:—1. Any person adulterating, or causing others to adulterate, any article of food or drink, by the addition of any injurious or poisonous ingredient, or who shall in any way adulterate any drug, is to be fined 50*l.* for the first offence, and on the second conviction to be imprisoned for not more than six months with hard labour. 2. Any person who knowingly sells any article of food or drink mixed with anything injurious to health, or any kind of adulterated food, drink, or drug, becomes liable for each offence to a fine not exceeding 20*l.* and costs; and on a second conviction the name, address, and offence are to be published, at his expense, in such newspaper or in such manner as the justices shall direct. 3. The addition of any substance whatever to any article of food, or drink, or any drug, in order fraudulently to increase its weight or bulk, without the fact being clearly stated, shall be deemed to be adulteration. There is also a provision in the Act that the analysts shall make monthly reports of the adulterations they have detected. The analysts may also give certificates of purity or adulteration of any article of food or drink to private purchasers on the payment of a fee.

Curious results are already showing themselves under the anticipative influence of this Act. Thus, at Sheffield and elsewhere the price of milk is being raised; so is the price of beer in London. At Sheffield the ingenuous admission was made that it was on account of the passing of the Adulteration Act that the price was raised. The adulteration of milk with water, however, is a harmless sort of adulteration compared with that of "maddening drink" with Cocculus Indicus, strychnine, or grains of "Paradise," or rather of Pandemonium, which it is to be hoped, although they are organic poisons, will not escape detection.

THE SOMERSETSHIRE LABOURER.

Sir,—As you have thought the state of things at Chiselborough of sufficient importance to deserve a notice in the *Builder*, you may, perhaps, be not unwilling to insert a few modifying facts:—

1. Your readers will doubtless be pleased to hear that instances of the goître are becoming exceedingly rare. I know of but four remaining, and there has been no fresh case for the last half-century, nor is there any lack of intelligence amongst the rising generation or the people generally.

2. Our schools are well attended. Out of a population of 419, by the last census, we have at day-school, 77; evening-school, 34; Sunday-school, 105; and all have been highly commended, both by her Majesty's and the diocesan inspectors. A large singing-class assembles weekly in our capital new school-room, and the benefits of our clothing and other clubs are fully appreciated.

3. As to the outward aspect of the inhabitants, your correspondent's notions may be peculiar or he may have been specially unfortunate. I should have said that so large a proportion of hearty, healthy men and handsome young girls could rarely be met with elsewhere.

4. Some of our cottages are doubtless faulty; some of the worst belong to the occupiers or to owners equally poor. Most have either gardens or allotments.

5. As to the general healthiness of the people, I can vouch for this, that the deaths since last January have been but four,—three infants and but one adult.

C. Fredk. Newell,
Rector of Chiselborough.

"*Haselbury, Crewkerne, Dec.* 11, 1872.

In an article in your paper of the 7th inst., 'On the Houses of the Labourer in Somersetshire,' you mention Lord Portman's name as the owner of some of them. I beg to inform you that his lordship has no house or cottage in either of the parishes you mentioned.

Ht. Parsons, Steward of the Estate."

*** We were distinctly informed on the spot by the tenants that some of the houses visited were on the property of Lord Portman. We shall not fail to inquire into the cause of the discrepancy.

CEASE THAT KNOCKING AT THE DOOR.

Sir,—I reside in an off street; some people would think it secluded and quiet, but it is not so.

In the dark hours of early morn the police are knocking up the half-past fours; if no reply is vouchsafed, rap-bang go the knockers again; then a short lull, a respiteful repose, and it is repeated later for others. The night police rouse out day police most vigorously,—eight bells with them,—but we are not all in their watch. It is very annoying to be so knocked up; to be woke up by the cats is trying, but you can retaliate with the water-jug.

The postman might drop our letters through box-apertures quietly; but no, he cannot resist the knocker rat-tat startlers to nervous invalids and babes in the wood. It is seriously wrong. Very early-risers should have a door-bell, and thus avoid disturbing their neighbours.

R. T.

THE ORIGIN OF WOOD-WORKING MACHINERY.*

No art seems to have been so fully developed, or so nearly perfected at one time and by one man, as that of wood-cutting machines by Sir Samuel Bentham, of England, brother of Jeremy Bentham, the celebrated writer on political economy.

In 1779 Bentham was directed by the Government to make a tour in the north of Europe to examine the progress of ship-building and other arts. During this tour, while in Russia, he invented the first *planing-machine* for wood, at least the first that could be called an organised operating machine. There is no doubt but that this was the original conception of a machine for smoothing the surface and giving dimensions to wood. It is to be regretted that no accurate description of the invention, so far as perfected at that date, has been preserved. Whether it operated by what, in his subsequent patents, he terms "rotative" motion, or whether it was a reciprocating machine, is, so far as the author of the work before us, Mr. Richards, can learn, left to conjecture. It would, however, be inferred from his first patent in England, of 1791, that it worked upon the later principle, for "planing and making mouldings" by some means that bore a close analogy to the hand operations of the times, and corresponds to the one described in the patent cited. Bentham, with that regard for his country's interest that is common with all Englishmen, communicated his invention to the British Ambassador at St. Petersburg, who advised him to keep his invention for England, which seems to have been done, as there is no account of his having made any public use of it while in Russia. He afterwards accepted a military commission in Russia, with the rank of lieutenant-colonel, and became the manager, or commandant, of extensive factories for the production of glass, metals, cordage, works in wood, &c. His very successful management of these works would, from accounts, lead us to suppose that he invented many new and useful machines; but of these there seems (in England) to be no record. He returned to England in 1791, about which time his brother, Jeremy Bentham, had received from the Government an appointment to introduce industrial prisons in England. This kind of labour being almost devoid of skill, the talents of his brother were called into use to devise machines that would make the labour more profitable, and at the same time replace, to some extent, the want of skill of the convicts. To construct these machines, most of which were for working wood, the residence of Jeremy Bentham at Queen's-square-place, Westminster (now a part of London), was, with its capacious outhouses, converted into the *first manufactory* of wood-cutting machines. *Seventy-eight* years ago this factory was established, and, as we are informed, was not found to be sufficiently large, and a building, No. 19, York-street, was also occupied, which would lead us to suppose that a great many machines were made, and that the extent of the business fully entitles it to the distinction of being called the first general factory of such machines. Professor Willis, in a lecture before the Society of Arts in 1852, states that

"there were constructed machines for all general operations in woodwork, including planing, moulding, rebating, grooving, mortising, and sawing, both in coarse and fine work, in curved, winding, and transverse directions, shaping wood in complicated forms, and further, as an example, that all parts of a highly-finished window-sash were prepared, also all the parts of an ornamental carriage-wheel were made, so that *nothing remained to be done by hand but to put the component parts together.*"

These machines were examined by members of his Majesty's administration, and received official notice and commendation in the House of Commons in 1794. Bentham (Sir Samuel) was next commissioned to visit different dockyards, and to determine how far his machines could be applied to facilitate ship-building. At this time he refused a flattering offer from the Emperor of Russia, in order to accept this commission, choosing rather to give his country the benefit of his services than to reap a greater pecuniary reward that awaited him in Russia.

His report was, no doubt, very favourable, as to the employment of machines, but it was not until 1797 that the Admiralty consented to their introduction. It should have been mentioned that during the time of his manufacture of machines at Westminster and York-street, patents were taken out describing all the different operations performed. After the Admiralty deciding to adopt his machines, in 1797, they were manufactured under the direction of Jeremy Bentham, and forwarded from time to time to Portsmouth and Plymouth, where they performed, so far as any record shows, all that was claimed for them.

The bills specify lathes, saws, machines for cutting, tenons for boring, also for boring bitts and squaring tools, "and many other machines for different kinds of work." Machines were also devised by Bentham to facilitate block-making, an operation that is yet classed among the most difficult. His machines, however, for

* "A Treatise on the Construction and Operation of Wood-working Machines; including a History of the Origin and Progress of the Manufacture of Wood-working Machinery." Illustrated by numerous engravings. By J. Richards, Mechanical Engineer. Spon: London and New York.

this purpose did not seem to be perfect, for in 1810 he was joined by Brunel, who had invented a machine for "shaping block-shells." Brunel was at that time employed under Bentham to assist in the various operations, and to perfect his own machine, which must have had the endorsement of Bentham. In 1803 Sir Samuel, as Inspector-General, advised the Admiralty to adopt many additional machines that had already been approved, and to permit the erection of steam-engines to drive them, and they were accordingly ordered. The several dockyards were fitted with engines for sawing, planing, boring, tenoning, mortising, &c., and, apart from better construction and greater experience in their use, it is fair to infer they had nearly all the functions found in modern machines for these purposes. Their labour-saving capacity is sufficiently attested by the fact that Brunel, who had perfected and assisted in their construction and operation, was rewarded by being allowed, as a premium for his inventions, the estimated savings of one year's work over hand-labour in the dockyards, which amounted, as Mr. Richards is informed, to the very large sum of 16,000*l.*

In 1813, arbitrators were appointed, on the part of the Government, to settle with Jeremy Bentham, and who, after the examination of numerous witnesses, allowed him the sum of 20,000*l.* for machines furnished to the dockyards and penitentiaries. From the testimony given before this commission we learn that "Sir Samuel Bentham prepared a system of machinery for the employment of men without skill, and particularly with a view to utilising convict labour. In 1793 patents were taken out on these inventions to secure their exclusive use for the prisons. The testimony states that no skill was required in the use of these machines: they were introduced into the dockyards, and worked by common labourers." The use of the machines saved *nine-tenths* of the labour. "A table could be made at one-half the expense by their use," &c., which goes to show that the machines were, at least, effective,—a claim that cannot in many cases be made for those of more modern manufacture.

The machines and appliances for working wood that were invented and practically applied by Sir Samuel Bentham previously to the year 1800 are enumerated by Mr. Richards as follows:—

"Machine for planing and forming mouldings; improved planing and moulding machine (rotary); wedging-guard for circular saws; segmental circular saw; conical cutters for dovetail grooves; undulating carriage, to form wave mouldings; compound cutter-heads, to work two or more sides at once; the *slide-rest*; tubular boring implements (core-boring); crown saws (or cylinder saws); reciprocating mortise-machine; rotary mortising-machine; radius arm for sawing segments; tracer guide for sawing irregular forms; bevil and curvilinear sawing; machine for grinding saw-blades; taper-gauge for sawing; grooving-table; vertical adjustment of saws in benches; T rebating-machine; sectional cutters; pivoted table for mortise-machines; forked or double-mortise chisels; gauge-lathe, with slide-rest; rotary cutters for forming screw threads on wooden screws; double-grooving saws; rack-feed for planing-machines; with many other things."

The slide rest for turning is very fully and clearly described in Bentham's patent of 1793, and it ranks with the greatest, as an invention in engineering implements. It gave us the engine lathe, without which our modern practice in machine-fitting could not be carried on.

The facts adduced will be sufficient to show that Sir Samuel Bentham is entitled to the distinction of being called the "Father of wood-working machines" in England, at a date that precludes any probability of his inventions having been anticipated in other countries.

Mr. Richards, after giving these and other particulars as to the introduction of wood-working machinery, proceeds to speak of other inventors, and of many inventions and improvements, both in this country and in America, since that period. Of American wood-working machines he says,—

"It can be safely asserted as a fact that there are throughout American factories but few wood-machines that have been running for ten years, and if any such exist there is a good and sufficient reason for abandoning them. The life of most machines used in joinery is not on an average more than six years, under any special modification. So general is this rule that in the sale of patents for wood-cutting machines their value is based upon a monopoly that will not exceed that time. For this reason it is easy to see that manufacturers who use such machines do not care to make large investments in machinery that will in so short a time be out of use."

It is to be regretted that there are no statistics at hand to show the amount of wood-machinery that is now made by the several engineering firms who make this kind of machinery a speciality; but it could, no doubt, says Mr. Richards, with safety, be set down, for the last year, in England and America, at a value of not less than 500,000*l.* sterling. Besides, it cannot be reckoned in its importance on the same basis as many other branches of manufacture, that of monetary value: it has a deeper significance in connexion with the material advancement and welfare of the country. All the machinery of this kind made in America, and a large portion of that built in England, is for home use, to assist directly in developing the resources of the country, in building houses, ships, furniture, and thousands of articles of convenience and necessity. In fact, there is no branch of manufacture that has a more intimate connexion with the interest of all than wood conversion.

Wood-working machines were at first made, as a rule, by carpenters, and not by engineers or machinists. This was especially the case in the United States twenty years since, when nearly all makers of wood-machines were themselves wood-workmen. Machinists could not, of course, build machines the functions of which they did not understand: geometrical drawings, to embody the ideas of the wood-workmen were in this, as in other branches of industry, almost unknown. Hence the carpenter, cabinet-maker, and ship-builder set about to construct machines that would perform by power what he had before done by hand. Iron was to him a new material. He had not in his mind constants, or rules for proportions, like an engineer or machinist, but blindly supplied a shaft here, a pulley there, with bolts and framing to support them, very much as he would have made a house. The movement and application of the cutting edge was the prime object,—everything else unimportant. This same fact accounts fully for the peculiar designs which we see in the framing of American wood-working machines.

In America a village of 2,000 or more inhabitants, with the surrounding country, is said to be large enough to support a planing-mill; which then means a regular wood-working manufactory, equipped with saws, planers, lathes, tools for mortising and boring,—in fact, all operations in wood-work. So general is the want of such work in America, that there is not, perhaps, in the whole country a village of the size mentioned without its planing-mill, and perhaps a half-dozen other establishments making specialities for the general market, or ploughs, wagons, furniture, &c., for local trade. Very little hand-work is done,—in the language of the country, "it does not pay." A man costs from fifteen to twenty dollars a week, but a "man-power" in a steam-engine does not cost as many shillings: hence the steam is the cheapest, it does not strike, is always at its post, and is easier controlled. The intelligence it lacks must be supplied in the machines. This is the American idea of wood-work in general. Prices are uniform all through the country, and hand-work is out of the question. Wood-cutting machines are made in all the cities in America, besides numerous shops scattered over the country, that make more or less; but, as said, there is no special centre for this kind of work, either in America or in England, where the same rule holds: wood-machines are made in various parts of the kingdom.

A fault common among builders of wood-machines is the jealousy that exists, and the inclination to keep their shops closed, or their plans secret,—an error that prevails with all kinds of manufacture when undergoing change and improvement. It, however, disappears as an art becomes more perfect, and will, no doubt, be so in this case.

From about the year 1815 to the Universal Exhibition of London in 1851, the manufacture of wood-working machines in England remained but a limited business, and no advance was made that at all compared with what was effected in other branches of engineering. Many machines for special uses were, no doubt, made and used that combined both skill and ingenuity; but, upon the whole, wood-machines may be said to have lain dormant in England for a period of forty years.

During the Exhibition of 1851, the performance of the "wood-framed" American machines was such as to create astonishment. English engineers at once proceeded to clothe the "ideas" these machines suggested in a mechanism more in keeping with their purpose and the true principles of machine-construction, and out of it grew, as we may say, a large share of modern practice in England.

In following the history of wood-machines, it might be said that, from 1835 to 1852, the development of the art was transferred from the Old to the New World. The American people, without iron, or the means of adapting it to the many uses to which it was already applied in England, adopted instead the wood of their forests, applying it to all conceivable uses in the construction of buildings, ships, machines, roads, and the framing of steam-engines, for which purpose it is even yet, to a large extent, used. Necessity, which has been termed the mother of invention, coupled with a strong ingenuity and boldness of plan that has always characterised the Americans, led to a rapid development of an entirely new system of wood-machines for sawing, planing, boring, mortising, tenoning, &c., besides hundreds of modifications of special machines adapted to the manufacture of carriages, ploughs, furniture, joiners' work, bent work, &c.

Since 1850, the inventions in wood-machines have followed each other in rapid succession in America. The most complicated forms in wood of regular or irregular outline are produced at a cost, and with a degree of accuracy, which cannot be attained by hand manipulation. Engineers and inventors, in both Europe and America, during two or three years, have been giving to wood-machines such attention as they demand, and the wants of the market have forced out. Within the past two years the art has been raised to the dignity of recognition among other branches of engineering; the scientific journals of England have given more space to wood-machines than for the previous ten or even twenty years; and regular engineering establishments are springing up in England, America, and on the Continent, which give their attention to wood-working machines as a specialty.

The manufacture of wood-working machinery is now chiefly carried on in England, America, France, and Northern Germany.

Having consecutively followed the leading operations in wood-conversion through sawing, planing, mortising, and tenoning, which Mr. Richards illustrates with numerous and elaborate engraved views of machines of many kinds, he concludes his valuable treatise with accounts of some of recent origin,—such as shaping machinery, under which head can be classed all operations involving irregular lines, or, to state it otherwise, all operations that involve other than straight or circular lines. This class of wood-cutting machines is of recent origin, when compared with those for working straight or cylindrical forms, and yet, from the endless adaptation that the principle is capable of, it comprehends a greater variety of machines than is directed to either sawing or planing.

Down to about the year 1830, all operations in wood-work that involved irregular lines were, without exception, performed by hand; and it would be no exaggeration to say that even at the present time the general principles upon which such machines operate are but imperfectly understood.

There was, in fact, such an air of improbability about the cutting out of shoe-lasts, gun-stocks, &c., by machines, at the beginning, that the impression has not yet passed away.

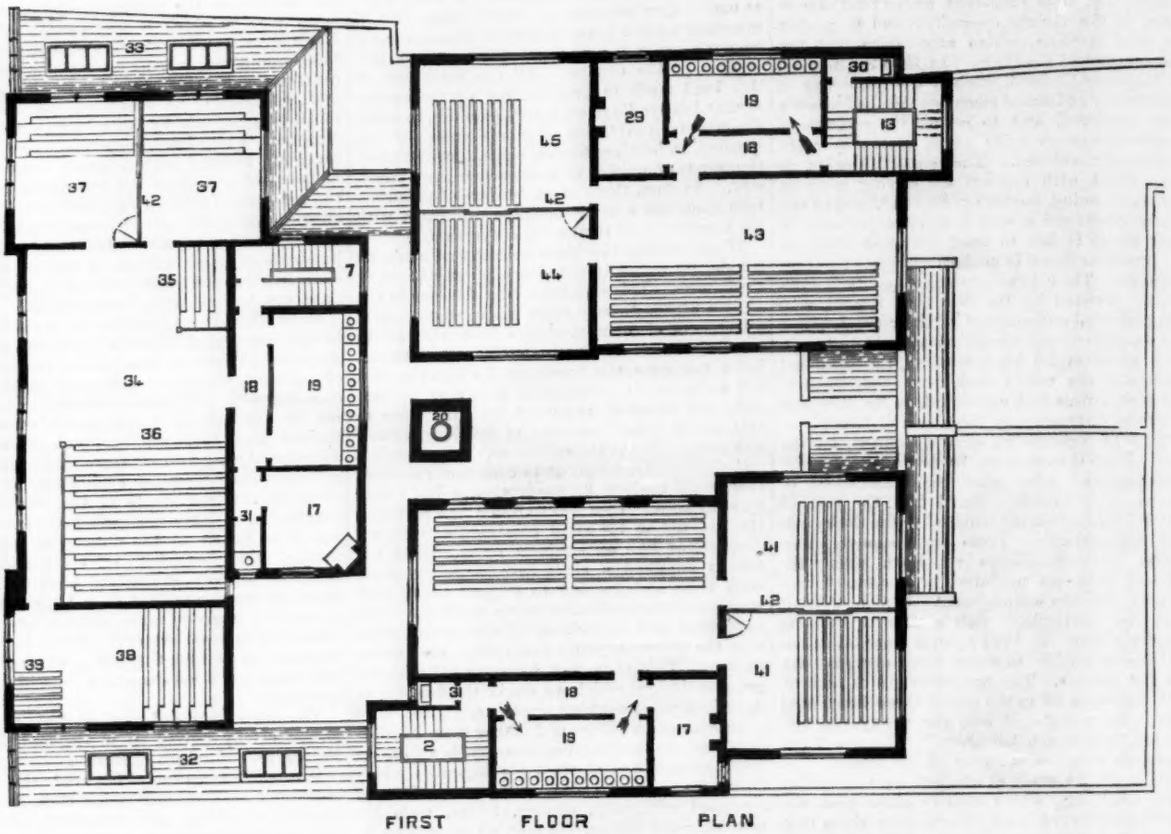
The mechanism involved contributes to this impression: it is of a character more complicated than that for straight lines or curves,—so much so, indeed, that in some cases the plan of operating is with great difficulty explained to the unskilled.

Shaping-machinery, in the sense in which the term is here employed, comprehends turning-machines for irregular forms, carving-machines, and machines operating in one plane only, such as the moulding-tables with right and left spindles. The operation of all these machines can be described, in a general way, as "working from a pattern," duplicating forms already produced, from which and by which the action of the tools is directed.

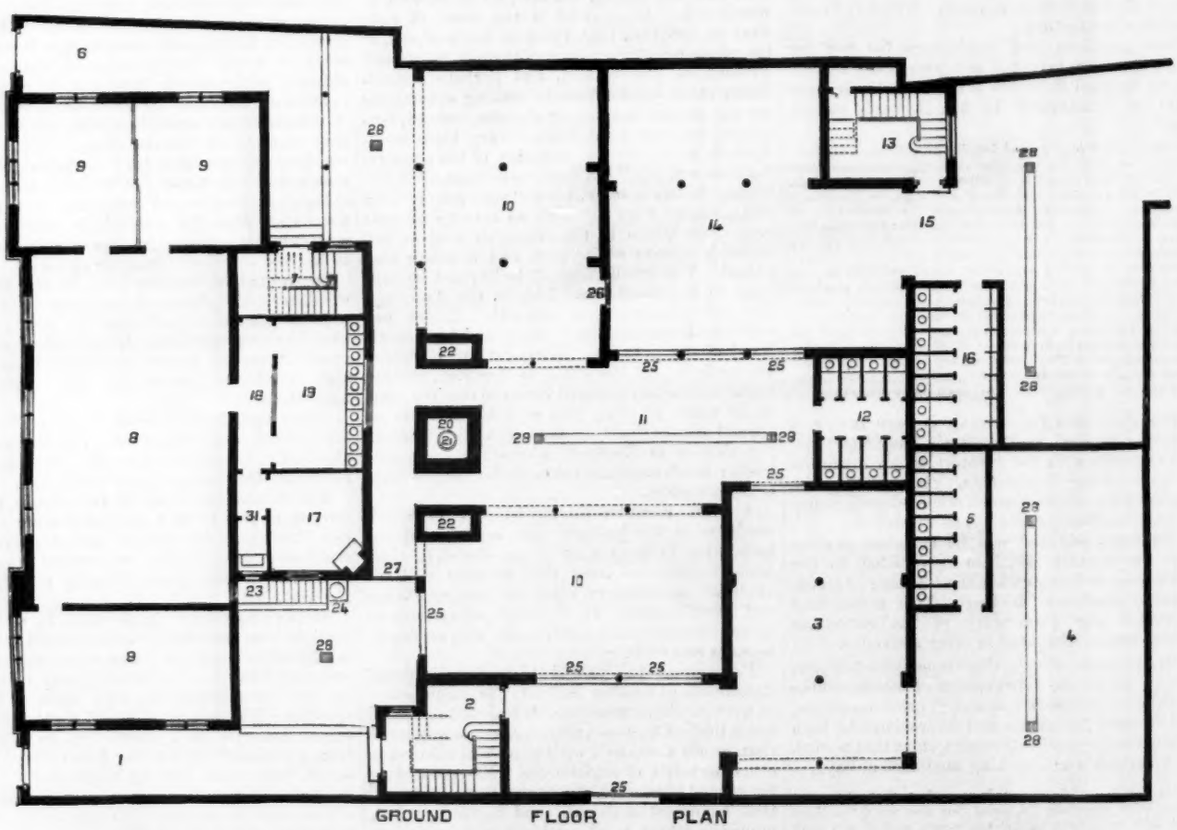
The part in contact with the model can be termed a guide, between which and the cutting-tools, or the blank itself, there is coincident movement. In all the various modifications of machinery for shaping we find the same mechanical equivalents, although, for the better understanding of them, they can be divided into two classes,—those that adjust or move the tools, and those that adjust or move the material so as to receive the action of the cutters on its different configurations.

Another recent invention connected with wood-working is the pneumatic conductor for dust and shavings, and clearing workshops, which has lately come into use in America.

SCHOOL BUILDINGS, WINCHESTER STREET, FINSBURY.



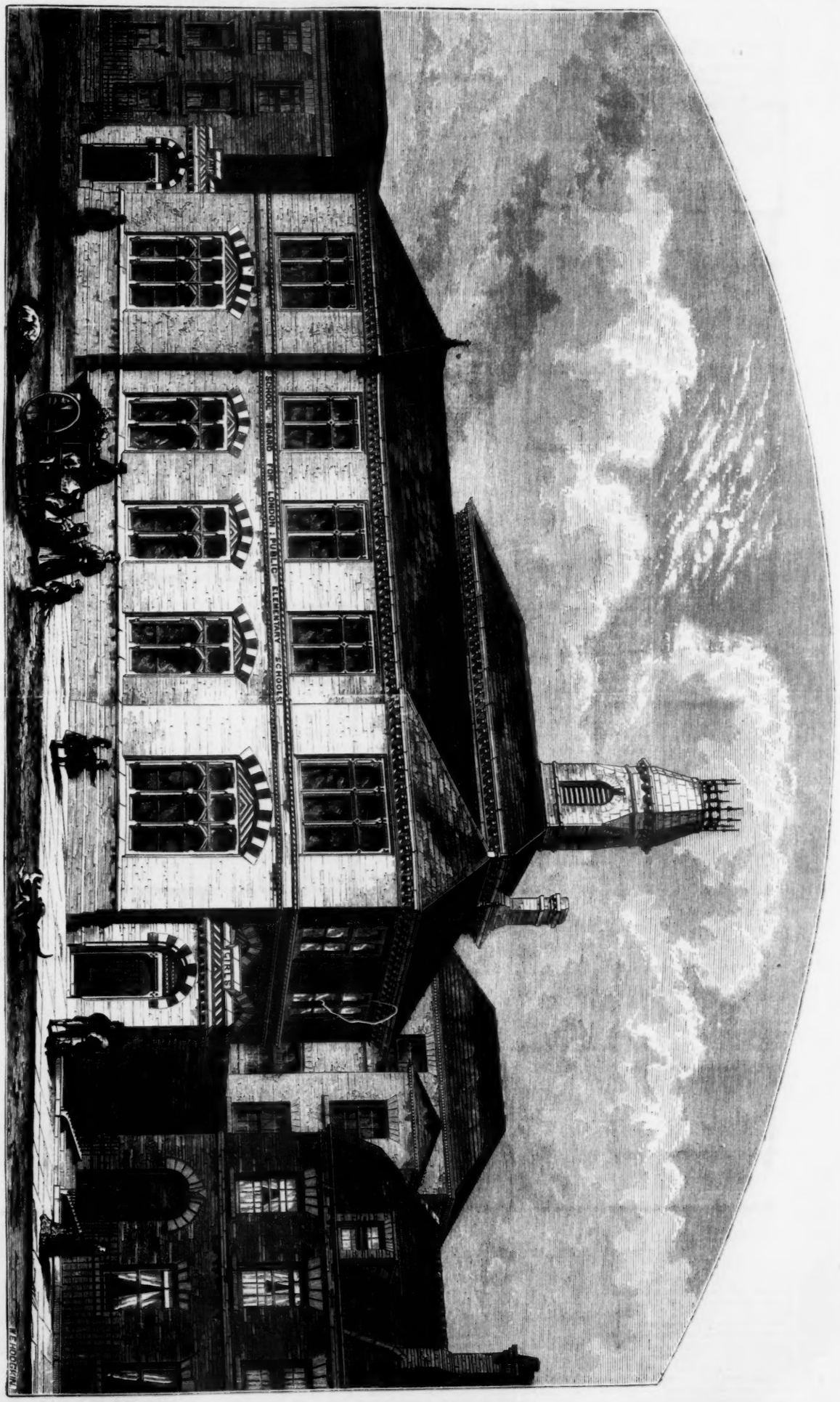
FIRST FLOOR PLAN



GROUND FLOOR PLAN

SCALE OF 10 5 0 10 20 30 40 50 60 10 FEET

1. Girls' entrance, covered way.
2. Entrance-door and staircase for girls.
3. Girls' covered playground.
4. Girls' open playground. 5. Girls' w.cs.
6. Infants' entrance, covered way.
7. Entrance-door and staircase for infants.
8. Infants' school-room. 9. Infants' class-rooms.
10. Infants' covered playground.
11. Infants' open playground. 12. Infants' w.cs.
13. Staircase for boys. 14. Boys' covered playground.
15. Boys' open playground. 16. Boys' w.cs.
17. Apparatus or mistress's room.
18. Corridor. 19. Lavatory.
20. Ventilating-shaft. 21. Smoke.
22. Hot-air shaft. 23. Stairs to heating apparatus.
24. Coal-shoot. 25. Lights.
26. Locked door. 27. Locked gate.
28. Traps. 29. Apparatus or master's room.
30. Masters' w.c. 31. Mistress's w.c. and lobby.
32. Roof over girls' covered way.
33. Roof over infants' covered way.
34. Infants' school-room, 44 ft. by 25 ft. 6 in., 1,122 ft. super.
35. For 18 children.
36. Gallery for 140 children.
37, 37. Infants' class-rooms, each 18 ft. by 16 ft., 288 ft. super.; gallery for 30 children.
38. Infants' class-room, 27 ft. by 14 ft., 378 ft. super.; gallery for 40 children.
39. Desks for 12 children.
40. Girls' school-room, 38 ft. by 20 ft. 6 in., 779 ft. super.; gallery for 80 children.
41, 41. Girls' class-rooms, each 22 ft. by 17 ft., 407 ft. super.; galleries, each for 40 children.
42. Removable partition.
43. Boys' school-room, 38 ft. by 20 ft. 6 in., 779 ft. super.; galleries for 80 children.
44, 45. Boys' class-rooms, 22 ft. by 18 ft. 6 in., and 22 ft. by 17 ft., each 407 ft. super.; galleries, each for 40 children.



SCHOOL BUILDINGS FOR THE LONDON SCHOOL BOARD, WINCHESTER STREET, FINSBURY.—MR. CHARLES BARRY, ARCHITECT.

SCHOOL BUILDINGS FOR THE LONDON SCHOOL BOARD, WINCHESTER-STREET, FINSBURY.

OUR engravings illustrate the design by Mr. Charles Barry which has been selected for the school in Winchester-street, Finsbury. The builders are Messrs. Downs & Co., of Union-street, Southwark, and their tender is 9,328*l*. The schools were proposed for 1,040 children, but will accommodate 1,150. We take a few passages from the architect's original description of his design. The site, having reference to the number of children intended to be accommodated, is so small that even limited play-space could only be obtained apparently by having nearly the whole area under the boys' and girls' school formed into covered space for this purpose. This necessarily raises the lower floor-levels of the schools in each case of boys and girls about 10 ft. above the general ground-level. But as this is considered objectionable in the case of the infants, they have been accommodated in a separate block of building fronting to Winchester-street, and only two steps above its level.

The entrances for infants and also for the girls are placed in Winchester-street, while that for the boys is through the present house in Southampton-street, the ground-floor and street-front of which is to be slightly altered to evidence its character as part of the School Board's property, and the upper part of this house is proposed to be given to the care-taker for a residence.

The two infants' schools for 200 each will thus occupy the whole front in Winchester-street. The boys' school will be accommodated in two schools (senior and junior), one over the other, with covered play-space under the lower one. The girls' school will be similarly treated.

Each department is designed in a separate block of building, having between them an open court for light and air to each block, and to the play space, with a view to depend for light as little as possible on adjoining open spaces, but which are not the property of the Board.

A drawing-class room, separately approached from the senior schools of the boys and of the girls, is placed on the upper part of the centre building, in the rear portion of it, and will be lighted from the roof and from the north side. This room will be also available as a managers' room when such is required, and is therefore also approached separately by continuing the staircase of infant school to the top: a private w.c. has also been provided for the use of the managers.

Masters' and mistresses' private rooms are provided adjoining each schoolroom.

Every school and class room is lighted from two different sides of the room, and so as to ensure side lights to the class-rooms and through-ventilation in all.

The materials proposed are, for all walls except those of the front building in Winchester-street, ordinary grey stock bricks. The window openings are in wrought-iron, galvanised, with openings for air in every window.

The building in Winchester-street is proposed to be faced with red bricks; the cornices, strings, and so on, are in white moulded bricks; and the windows in Ransome's patent stone, fitted also with wrought-iron casements.

The roof of the front building is to be covered with Taylor's patent tiles, and the other buildings will have ordinary slates.

The staircases are to be of stone, the outer ends of the steps and landings being carried on wrought-iron girders fitted to the necessary shapes.

The finishings to the walls inside will be paint to a height of 5 ft. 6 in. from the floor, and distemper above that level.

The water-closets and lavatories within the building are planned one over the other, for economy in construction and in the plumbers' work, as also for simplicity of outfall to drainage. The waterclosets for the children's use are grouped all together for the sake of ready and efficient drainage. They are to be fitted with Jennings's patent trough school-closets in solid pottery, the water in each closet being always at a given level; while each range can be flushed out as frequently as found desirable by opening a valve at one end of the range and turning on a service of water at the other. The valve and service-cock will be in a locked compartment, so that the children cannot interfere with the arrangement. The drains are to be kept outside the building.

The warming will be carried out on the principle adopted by Messrs. Haden,—a combined system of warm air and warm-water pipes. The warm air will pass by horizontal channels under the ground-floor of the schools, being admitted into the rooms either by the skirting or floor-gratings. A supply to the upper floors will be taken by flues in the walls, and admitted, in like manner, by the skirtings. This is the first school, we believe, to which this system has been applied. The class-rooms will be warmed by hot-water circulating pipes slightly raised above the floor-level, and the flow and return pipes to these will pass through the warm-air horizontal channel above mentioned, thereby assisting in keeping up its temperature.

The boiler and heating apparatus will be in the basement, and the flue of the boiler formed of iron plate will be taken up the centre of the ventilating-shaft.

As to the ventilation, from every school and class room there will be gratings near the ceilings communicating with horizontal channels formed in the floors and roofs, and all terminating in a ventilating-shaft carried above all the roofs. A strong up-draught will exist in this shaft, both from its height and also from the aid given by the warm flue from the boiler passing up its centre. In summer weather, when warming is not required, a small pilot-furnace at the foot of this flue will keep up its action in aid of the extracting power of the shaft.

The cubic contents of the buildings, including the covered play-spaces, are called by the architect 392,669 ft.

ANOTHER VIEW OF PROFESSIONAL *ESPRIT DE CORPS*.

SIR,—Mr. Roger Smith's interesting paper on *Esprit de Corps* deserves the attention of all your readers, for it deals with a subject of the first importance, both to the profession and to the public. The advantages to be expected from intense *esprit de corps* are ably put forward—always of course from a professional point of view, and some of them would probably be found to result. But is there not an obverse to the medal? Is it clear that nothing worse than "fitting professional pride," courtesy of demeanour, increased general culture, and the extinction of "malversation" amongst architects would ensue? Or is there not cause to fear that "a homogeneous, well-organised body," strong enough to bring all this about, might be sometimes tempted to use its strength on behalf of selfish interests? Mr. Smith asks,—

"Does *esprit de corps* do for us anything like what it does for the soldier, the lawyer, and the doctor? And if so fine a profession as ours fails, in some respects, to command the social position which is generally accorded to the members of some others which I have named, is not our own deficiency in *esprit de corps* at the root of much of that failure?"

The professions named are significant, for it is precisely in these that the evil results we fear are conspicuous. The obstruction offered by "the colonels" in the House of Commons to the abolition of purchase, when our Constitutional forms were strained until they were ready to crack, will not soon be forgotton. The nation was then scandalised by the spectacle of an unseemly struggle for pounds, shillings, and pence, which any one of the gentlemen concerned would have been shot rather than be guilty of for himself, but gloried in it because it was for "the service."

Even the *Saturday Review* has recently declared the action of the authorities at Edinburgh in the case of Miss Jex Blake and her friends to be "discreditable," and the conduct of the Society of Apothecaries scarcely deserves a milder epithet; and Mr. Stansfeld has called down from the faculty a perfect storm upon his head, because he declines to deliver us into the hands of an army of doctors,—all which should warn us that even individual freedom is held subordinate to professional advancement. A perusal of the Act of 1858 reveals also the curious fact that persons holding eminent foreign diplomas, not only cannot be registered as medical practitioners in this country, but are unable even to make good a claim to be examined with a view to registration.

But it is in the law that we best see how powerful and how obstructive a trade-union of educated men may become. It is not too much to say that the public welfare is consistently sacrificed to the presumed interests of that profession. There is no reason why land should not be as saleable as Consols; there is no reason against a fusion of equity and law; there is every reason why "the law's delay" should cease to be a proverb, and legal education a farce. It remains to be seen whether Government will undertake with better success than private members the task of reforming the first of these matters. But we know that successive chancellors and law officers of the Crown have not attempted, or have failed, to remedy the second and third, and even Lord Selborne's character and position have not as yet sufficed to make any improvement in the last. It is not denied that a change is called for by the public good. Why, then, do we see no change? A writer in the *Spectator*, agreeing here with the Attorney-General, gives the answer. It is because *the electors* are not sufficiently aroused to insist upon it. This is for our purpose the most significant point of the whole matter. It does not occur to any one that the profession will attempt to reform itself. We all *assume* that acknowledged abuses must continue until they can be removed by overwhelming pressure from without. Much might be added to this, but I fear to trespass further on your indulgence. Those who desire more information should read Mr. Fitzjames Stephen on "Codification," in the current *Fortnightly*, and Mr. Vernon Harcourt's letters to the *Times*. Enough has been adduced to show that the fact that the members of a society are men of culture and social position, affords no guarantee that its organisation will not be used for purposes of the most naked selfishness. And not only so, but while the *power* of professional corporations alone renders these abuses possible, their position and prestige give them an air of respectability which prevents us from knowing them for what they are.

Mr. Smith would hope to obtain in a union of architects the unquestionable advantages he points out, without the evils which some of us think more than counterbalance these. Architects, however, are not made of different clay from other men, and we have no reason to believe architects in the future would show more public spirit than doctors and lawyers in the present and the past. One of the headings for clauses of contract which the council of the Royal Institute of British Architects, about two years ago, recommended to the members of the Institute for adoption, has the genuine trade-union flavour. This clause relates to the settlement of disputes by arbitration, and contains the following proviso:—

"The arbitrator being *an architect and a Fellow of the Royal Institute of British Architects*, agreed to by the parties, or appointed by the president for the time being of the Royal Institute of British Architects."

We are blind indeed if we do not see here the "temper of mind" we deplore. The spirit is there,—the machinery alone is wanting. If Mr. Smith's idea were taken up with zeal, and the profession "fenced round" and built up into "a homogeneous, a shapely, a well-organised body," the *esprit de corps* which that gentleman invokes would soon pass beyond the limits he would wish to impose on it. In no long time we should have a new trade-union in our midst, as formidable in its way as any of those which are now only tolerated because they exist.

F. H.

WEYMOUTH SEWERAGE.

SIR,—Allow us to thank you very much for your courtesy in inserting our previous letter, and for taking the trouble to answer it; but, in justice to ourselves, we are desirous of joining issue on two or three points of your reply, which we think are open to question.

The Corporation of Weymouth *did*, no doubt, represent the opinions of the ratepayers some time ago, but whether they do so now is very doubtful indeed. We accept your opinion that a local inquiry by a Government inspector was not *legally* necessary; but we still think it was usual, proper, and desirable before sanction was given to works of such importance. That the experimental "strainer," which is to cost 750*l*. will prove useless is very probably a true prophecy; but are there not other methods of utilising or deodorising sewage than by this particular "strainer," or the method of irrigation proposed by Sir John Coode? As to your statement that the dam will prevent the continuance of stagnant and putrid water, we can only say that the remark must be a *lapsus calami*; for it is surely not consistent with common sense that to dam water up will make it less stagnant or putrid. Under present conditions the tide flows over and scours the backwater twice a day.

Referring to the borrowing question, we may observe that most precipitous and unnecessary haste was exhibited by the Corporation in entering into an agreement to borrow the 25,000*l*. on such terms as they did, long before the money was wanted. We find that the Public Health Act was passed on the 10th of August, 1872, but the works were not at that time commenced, and the money was not actually borrowed until six weeks afterwards, the first payment to contractors on account of the works not being due until the middle of October. It cannot, therefore, be said that it was too late to take advantage of the Act.

With these facts before us, it is impossible to agree with you that "the Corporation has done the best" for the ratepayers, seeing that the repayment of the loan

will fall more than twice as heavy upon the latter as it might have done if the Corporation had only acted more deliberately. We anxiously desire to see the town in a perfect sanitary state, but think you will agree with us that a choice of competing plans would probably have enabled the town to get a more satisfactory scheme than the one which has unfortunately been adopted. The Corporation and Sir John Coode, moreover, both seem by their actions to have little faith in the plan: else why, after obtaining sanction, &c., are they now trying a totally opposite system, besides having inquired into other systems subsequent to the publication of Sir John Coode's plans?

Twelve Ratepayers of Weymouth.

Mr. Charles E. Austin demurs to our remark on his strainers, and sends us an account of the good effects attending their use elsewhere. We must adhere to our expressed opinion, but desire to add the particular observation referred to applies only to their proposed use at Weymouth.

"ALMS CUPS."

Sir,—Will any of your subscribers kindly give me some information concerning the above, as I should like to know if they are a local peculiarity or not? I send you a sketch of one given to its present owner by the son of a former vicar of Harwich, who died at the age of 90 years; and as it belonged to his father before him, I presume it is rather old.* It is supposed to have once belonged to Harwich Church. The cup (vase-shaped) is made of oak, and the heads are blacked, standing, to the top of the acorn on the lid, 6 in. high.

A few days ago I saw another at Harwich, twice the size, differing in shape only in having three beads at the stem instead of one. This specimen was not perfect, having a part of its lid broken. From what I can learn, they used to be placed at the end of the benches for the people to put their alms into. G. V. B.

ARCHITECTURAL COMPETITIONS.

Sir,—Though a "non-professional," I can from experience confirm the remarks in Mr. Thos. Chas. Sorby's bold and manly letter in your last week's impression, so far as South-west Yorkshire is concerned.

Committees look upon "architectural trade-unionism" either with fear or something worse: hence it has become the rule to insert, "Committees to be judges of the designs." How has this come to pass? Have there not been too much "tall talk" and too little practical knowledge manifested by the "upper ten"?

Stephen Seal.

CENTRAL ASSOCIATION OF MASTER BUILDERS OF LONDON.

We mentioned in our last the first general meeting of this Association, and gave the names of the committee. In reply to inquiries, the objects of the Association are set forth as follows:—

"The object of the Association will be the promotion and protection of the interests of the building trade of London generally, and of the members of the Association in particular, by the following amongst other means:—

1. Unity of action in the settlement of all questions arising between employers and their workmen, with a view to prevent lock-outs or unjust strikes against individual members of the Association.

2. The general adoption of equitable conditions of contract such as those recently agreed to by the Royal Institute of British Architects.

3. The interchange of information and mutual co-operation, when desirable, with other kindred societies throughout the country.

4. The collection and circulation amongst its members of statistics and other information considered to be for the general interests of the trade.

5. The keeping a register at the offices of the Association, of foremen and others who can be recommended for employment."

FOOT BRIDGES FOR CROWDED CROSSINGS.

Sir,—I believe it has several times been proposed to construct subways to the thronged crossings, such as those at the Oxford and Piccadilly circuses, but I do not know whether bridgeways have been suggested. The complex arterial system of gas and water pipes militates against the *subway*, and at first thoughts the notion of foot-bridges would be condemned on account of the space required for their approaches, staircases, &c.; but on reflection it will be seen that the supposed insurmountable difficulties might be easily got over by recessing the approaches into house space, and making the bridge ways debouch from the level of the first floors. This would, of course, involve the purchase of house property; but the outlay for this purpose would be quite insignificant to the Metropolitan Board.

To realise the suggestion at the Oxford-circus, four houses would be required to furnish the necessary space for the construction of the staircases and abutments. From the height of the first floors, I propose that the iron footways should pass diagonally, and receive, at their intersection in the centre, support from below. At this junction point, and above, there should be the lamp support which might be combined with the pier beneath, in such a way as to form a very handsome architectural feature, and which would, in conjunction with the footways, become novel and picturesque objects in some of our metropolitan vistas.

W. Cave Thomas.

*** The proposition has been often made (first, we believe, in our own columns), but has never yet taken such a shape as to commend itself to authorities. Drawings illustrating the idea were submitted to one of the City Boards last session.

* Apparently eighteenth-century work.—Ed.

"I'LL BRING AN ACTION."

The *Builder* is probably the most good-natured journal in Europe. We never go out of our way to say an unkind word: we leave unsaid many disagreeable observations which might justly be made. Nevertheless, month by month (we might even shorten the period) we are informed by some irascible individual or other that unless we instantly make an apology, a writ will be served. These letters are ordinarily consigned to the waste paper-basket, and the writer escapes further notice. Patience, however, has its limits, and the limits of ours have been reached. We therefore print the following letter:—

"Stockton Exchange.

Stockton-on-Tees, Dec. 13, 1872.

Sir,—Our client, Mr. ———, of this place, has consulted us with reference to your libellous remark contained in your impression of the 7th December, 1872, foot-note at p. 971, which reflects in an injurious manner upon our client's character. As the insinuation of deceit is wholly unwarrantable, we trust you will at once withdraw the charge and apologise in your next issue; for unless you do so, we are instructed to take action against you forthwith. Dodds & Trotter."

What we said was that a deceptive account of the decision (in the competition) had been sent to us by one who ought to have known better. If Messrs. Dodds & Trotter know who sent us the particulars alluded to, they must have obtained their knowledge from some other source than our pages. We repeat that the account received by us was, whether intentionally or not, deceptive (as we could prove in two minutes, if it were necessary), and we must, with all respect, leave Messrs. Dodds & Trotter to take just what action against us they think fit.

ASBESTOS.

Sir,—I have several wooden buildings, which are at present very cold for cows and horses. I can board them on the inside, and leave a space of about 2 in. between the outer and inner boarding, which I propose to fill in with ground asbestos, as a good non-conductor. Will any reader tell me where to purchase it or anything that will be equally efficacious? C. E.

CHURCH-BUILDING NEWS.

Rotherham.—The chief stone of a new church has been laid at Eastwood. The site is at the junction of St. Ann's-road and St. Leonard's-road. The church will be in the Decorative style of the Geometric period. There will be a chancel, 28 ft. by 22 ft.; nave, 90 ft. by 25 ft.; south aisle, with tower and spire at the west end, 78 ft. by 11 ft.; north aisle, with porch at the west end, 90 ft. by 11 ft.; organ-chamber, opening into chancel and south aisle by arches, 15 ft. by 13 ft.; vestry in north-east, 15 ft. by 13 ft.; and warming chamber under vestry. In the interior, the church will be divided into nave and aisles by octagonal stone shafts, supporting stone arches, above which are the clearstories, pierced with two-light tracery windows. The aisle windows will be of two-lights each, and traceried. The east window of the chancel will be of five lights, with geometric tracery. The west window will be of four lights, also with tracery. The roofs, which are of high pitch, will be open-timbered. The chief entrance will be through the tower, which will supply the place of a south-west porch. Pew accommodation is provided for 600 adults in the nave and aisle, and for twenty-four choristers in the chancel. The church will be built of local stone, with dressed quoins and other ornamental features; the facings will be of the same stone, rock faced. The internal portions will be of Hooton stone. The contract for the whole of the works has been let to Mr. Ripley, of Rotherham, for 3,600*l*. The architects are Messrs. Thomas D. Barry & Sons, of Liverpool.

Leicester.—The foundation-stone of the (Earl) Howe Memorial Church of St. Peter has been laid. The style is of the early part of the thirteenth century. The edifice will consist on plan, of nave, north and south aisles, north and south transepts, chancel, with an apsidal eastern termination, western tower and spire, and organ chamber and vestry north of the chancel; there will be a clearstory above the nave. The principal dimensions internally are:—From east to west, 137 ft. 6 in.; across nave and aisles, 51 ft.; across transepts, 61 ft.; length of nave, 105 ft.; length of chancel, 32 ft. 6 in.; height of nave to apex of roof, 50 ft.; height of chancel to the boarding of roof, 40 ft. 6 in.; height of transepts, 27 ft. 6 in.; height of aisles, 19 ft.; height of tower and spire to top of stonework, 150 ft. The materials of the church will be Little Eaton stone for walling, and Doulting stone for all dressed masonry. The plain walling inside will be plastered. The nave and aisle roofs will be open-timbered, and those of the chancel and transepts boarded and panelled,—all of Baltic fir. The seating of the nave and aisles will be of Savannah pitch pine, and the seats and stalls in the chancel of wainscot, and screens of the same material will divide the chancel from the nave, vestry, and transepts. The eastern portion of the church as far as the centre of the first bay of the nave, west of the transepts, is alone included in the present contract. Mr. Street is the architect, and the contractor is Mr. Roberts, of Weedon, the amount of whose contract is 4,727*l*.

Kingston.—The new church of St. John the Evangelist, Spring-grove, has been consecrated by the Bishop of Winchester. The building stands on a piece of ground which the late Mr. W. Mercer, of Surbiton, made over to trustees for the purpose, and which is situate at the corner of Springfield-road. The materials used in the construction are Kentish ragstone for the walls, with Bath stone for windows, doors, and internal arches. The roofs are covered with strawberry-colour Broseley tiles, with ornamental tile cresting to the ridges, a superior kind being fixed on the chancel. On plan, the church comprises nave and aisles, south porch, transepts, chancel with apsidal east end, north chancel aisle, vestry, and tower in angle of chancel and south transept. As yet it is only carried up to the eaves of the chancel, and is covered with a temporary roof. The nave is 27 ft. wide, and divided from the aisles by four moulded arches, resting on piers clustered and circular alternately. Wider and more depressed arches open to the transepts. One of the caps in the nave has been carved, and it is hoped that others may be finished in like manner. This one is the gift of Mr. Shaw, of the firm of Jackson & Shaw, contractors for the works. The chancel, raised three steps, opens from the nave by a lofty arch, having shafts in the angles of the jambs; the inner order of mouldings resting on responds, supported on corbels. The choir-desks are of oak, with a prayer-desk on each side; a brass lectern, presented by the architect, stands on the chancel steps. The apse, of seven sides, is raised two steps above the chancel level, and is entered through a second arch corresponding to that between the nave and chancel. Light is obtained from five two-light windows with tracery. The centre window is filled with stained glass, given by Mr. E. H. Bedford; it is the work of Messrs. Ward & Hughes, of London, and represents the Crucifixion and St. John taking the Virgin to his own home, being one of a series of subjects. The central light of the west window of the nave is likewise of stained glass, executed by Messrs. Cox & Sons, and given by Lieutenant-Colonel Law. Both windows are memorials. The warming is effected by means of hot air passing from Gurney stoves under north transept. The church is lighted by gas coronæ of brass and painted iron, on each side of the nave, and one larger one of polished brass from the centre of the chancel roof. A bell, weighing 4 cwt., the gift of Mr. John Shrubsole, hangs in a temporary wooden bell-cage on the wall of the tower. The seats throughout are uniform in character, being open benches of deal, stained and varnished. Sittings are provided for 827 persons, the south aisle being free. The architect is Mr. Arthur J. Phelps, and the works have been carried out by Messrs. Jackson & Shaw, of Westminster. The cost, including lighting and warming, is a little over 7,000*l*. The carving has been executed by Messrs. Farmer & Brindley; the gas-fittings and metal work supplied by Messrs. Jones & Willis, of London and Birmingham.

Elmswell.—Elmswell Church has been reopened after a restoration and enlargement. Mr. J. Drayton Wyatt architect having been

consulted, designs were prepared for the complete restoration of the nave, and for the addition of a north aisle to correspond with that on the south. The contract, amounting to 1,150*l.*, was taken by Mr. W. Woods, of Elmswell.

Brandon.—The ancient chapel of ease to the mother church of Hough-on-the-Hill has been reopened. This antique place of worship having been found to require a complete restoration, the Right Hon. Earl Brownlow, who owns part of Brandon, determined that a suitable place of worship should be made for the inhabitants of the village. The entire cost for the work was about 500*l.*, which his lordship has entirely defrayed. The architect was Mr. Kirk, of Sleaford, and the contractors were Messrs. Rudd & Son, of Grantham. The seats in the body of the edifice will accommodate 100 persons.

Bridgnorth.—St. Leonard's Church was rebuilt some few years ago from the designs of Messrs. Slater & Carpenter, of London. The fine old tower, however, remained standing, but having become unsafe has been pulled down, and under the superintendence of some gentlemen a new tower, similar in detail to the original structure has been erected. The Rev. M. E. Stanbrough, the rector, under the guidance of Mr. Wiggal, the foreman, assisted by Mr. Harry Hems, of Exeter (the sculptor of the decorative part of the works), lowered the finial terminating the spire of the turret. In the evening the whole of the workmen employed upon the works were entertained to supper at the Pheasant Inn. The chair was taken by Mr. Wiggal, and the vice-chair by Mr. Harry Hems.

Bradshaw.—The new church of St. Maxentius, Bradshaw, near Bolton, has been consecrated by the Bishop of Manchester. Mr. Paley, of Lancaster, was the architect. The cost of the church is 4,300*l.*, exclusive of the site and burial-ground. Accommodation is provided for nearly 500, being more than double that afforded in the old church adjoining.

Southampton.—The dedication-stone of the proposed Millbrook New Church has been laid. The church is to be built upon a site given by Lady Barker Mill, immediately opposite the Old Manor House, and has been in course of erection for some time, and considerable progress has been made with the outer walls, which are several feet above ground. The church will be in the Early English style, with nave and side aisles, chancel and chancel aisles, vestry, tower and spire; but we believe the realisation of this as a whole is not at presented contemplated. The church will be of Swanage stone, with Farley Down stone dressings, and will be 170 ft. long: the chancel taking 38 ft. and the nave 132 ft. The height of the nave roof will be 58 ft. The church will accommodate 700 people, and its total cost is estimated at 7,000*l.*, but contracts to the amount of 4,800*l.* only have at present been entered into. The architect is Mr. Henry Woodyer, of Guildford; and the builders are Messrs. Newman & Son, of Winchester. The works are under the superintendence of a nephew of the architect, Mr. Coussmaker.

Wimblington.—The foundation-stone of St. Peter's Church, in this parish, has been laid in the presence of the Bishop of Ely, by Lady Frances Russell. The church will be in the Decorated style of the thirteenth century, with nave, chancel, octagon apse, and a tower, 18 ft. square, and about 120 ft. high. The amount of the contract is about 4,000*l.* Mr. T. H. Wyatt is the architect, and Messrs. Holland & Hannen are the builders.

Spring-grove.—The new church of St. John the Evangelist, Spring-grove, has been consecrated by the Bishop of Winchester. The edifice is built on ground given by the late Mr. Mercer, of Surbiton, who was also the donor of 2,000*l.* It was erected to supply the wants of the still increasing neighbourhood of Spring-grove. The cost of the building, exclusive of the architect's fees, &c., has been 7,000*l.* The church is built of Kentish rag stone, with dressings of Bath stone, except the quoins, which are worked in the rag stone. The roofs are covered with Beverley tiles, of the shade known as "strawberry," and the ridges finished with tile cresting, that on the chancel being more ornate than the others. The plan consists of nave with aisles, south porch, transepts, chancel with north aisle and vestry, and a seven-sided apse. The tower is on the south of the chancel, opening into it and the south transept. At present the tower is only built to the height of the eaves of the chancel roof. The principal entrance to the church is through the south porch. The nave, 87 ft. by 27 ft., is divided from it aisles by moulded arches, springing from piers alternately clustered and circular. All shafts throughout the building have the square abacus. One capital has been carved at the expense of Mr. Shaw, of the firm of contractors, and it is hoped that the others may be by degrees finished. The chancel is the same width as the nave. The centre window is filled with stained glass by Messrs. Ward & Hughes, of London: it is the gift of Mr. E. H. Bedford, and represents the Crucifixion and St. John taking the Virgin to his own home. The centre light of the west window of the nave is also filled with stained glass, presented by Lieut.-Col. Law, and executed by Messrs. Cox & Sons. Both gifts are *in memoriam*. The building is warmed by hot air passing from Gurney stoves placed under the north transept, through one large grating in the north aisle. Accommodation in open benches is provided for 827 persons; the south aisle being free. The works have been carried out by Messrs. Jackson & Shaw, of Westminster, at a cost, including lighting and warming, of a little over 7,000*l.* Mr. Arthur J. Phelps is the architect. The carving has been executed by Messrs. Farmer & Brindley. The gasfittings and other metal work were supplied by Messrs. Jones & Willis, of London & Birmingham.

Hedon.—The nave and aisles of the old parish church, which for some time past have been undergoing restoration, being completed, are now opened to the public. In July, 1869, the restoration of the south transept was completed, the south front being entirely rebuilt, and an open roof replacing the old one; at the same time the floor of the nave was lowered about 16 in., bringing to light much work at the bases of the clustered columns that have been hidden from view for a number of years, and other improvements were added, the architect, Mr. Street, supplying the plans, the work being carried out by Messrs. Shafto & Barry, of York. The cost of these works was upwards of 2,000*l.*, and of this sum 1,000*l.* were given by Mr. Christopher Sykes, M.P., thus leaving upwards of 1,000*l.* to be provided by the committee. This sum was quickly subscribed, and the works commenced. Being completed, the restored portion was publicly opened by the Archbishop of York, on July 30th, 1869. The vicar selected the western portion for restoration, as the one to which his next efforts should be directed, and in a short time the funds were provided. The western portion, now completed, consists of a nave and aisles, 85 ft. long and 48 ft. wide. The works have been carried out from the designs and under the superintendence of Mr. J. T. Webster, of Hedon, architect. Mr. Charles Atkinson was the contractor for the various works, the woodwork being executed by him; the stonework and carving (the principal features of the work) being given to Messrs. Wilson, Brothers, of Hull. Mr. Smith, Hull, executed the plumbers' and painters' work. The organ, under the hands of Mr. Cuthbert, of Hull, has been considerably enlarged and improved in compass and tone.

Skelbrook.—The newly-restored little church at Skelbrook has been reopened for divine service. The tower is the only portion of the structure which has not been rebuilt, though even this part has undergone considerable alteration, and has been carried about 6 ft. higher. The stone used for the wall facings and dressings (except that provided from the old material) is Ackworth, Ancaster, or sound grit of hard description. A surface drain is made round the entire walls of the tower, nave, chancel, and vestry, formed of patent vitrified bricks, 18 in. wide, with a fall of not less than 2 in. in 10 ft. The new roof is of pitch-pine, and the ironwork is joined with pins and screws. The accommodation now afforded consists of 110 sittings, all free. Part of the chancel, and the steps leading to and within the altar-rails, are laid with polished ornamental tiles, while the rest of the chancel and the nave are floored with Leicestershire tiles, all supplied by Messrs. Whetstone & Co., of Coalville. The church is warmed by means of flues heated with hot air. A stained-glass chancel-window, a memorial of the late Mrs. Percy Nevile, is from the establishment of Messrs. Heaton, Butler, & Bayne, of London. The subjects portrayed are the Good Shepherd, and some of the more notable incidents in our Saviour's life. The font is formed of Moor stone and Derbyshire spar. It is carved. The windows inserted in the Nevile Memorial chapel are all to be filled with coloured glass. Only one, however, at present is completed, the subject being taken from Revelations,—Alpha and Omega, the first and the last. The stonework both of the interior and the exterior of the edifice has been, in various places, carved; the woodwork, too, in several instances, displays the work of the carver's tool. The carver of the stonework was Mr. Scriven, of Doncaster, and of the wood, Messrs. Thorley & Mears, of Hull. The architect for the building was Mr. Joseph Goddard, of Leicester; and the contractors for the re-erection and restoration, were Messrs. Shillito & Morgan, of Campsall. The cost at the present time, from the many extra charges, cannot be accurately ascertained. It is expected, however, to range between 1,500*l.* and 1,800*l.*

DISSENTING CHURCH-BUILDING NEWS.

Halifax. — The New Connexion Wesleyan Methodists in Halifax have just completed a new place of worship in the town, which has been formally opened. The designs have been by Messrs. Hill & Swann, of Leeds and Sheffield; and the following have been the contractors:—Masons, Messrs. Dixon & Oates; joiners, Messrs. Smith & Brier; plumbers, Messrs. Walsh & Son; plasterer and slater, Mr. Ambler; and painter, Mr. Binns. The chapel is in the Early Decorated Gothic style of architecture, and the principal front faces North Parade. The front entrance is surmounted by a wide stretch of mullioned windows, consisting of a four-light window, having on either side and joined up to it a two-light window. The head of each window is filled in with geometrical tracery. On either side of the door is a lancet window, and the lofty gable at its summit is crowned by a floriated cross in metal-work. On the east side of this large gable is the gabled roof of the side entrance, a carved pinnacle being between. On the west side is a similar gablet, while instead of a pinnacle rises a lofty spirelet, carved and crocketed, and finishing in a metal cross. All the seats are in pitch pine, low open ones (no pew doors), and those beneath the side galleries incline slightly towards the pulpit. The galleries run around all sides of the chapel, that behind the pulpit being intended for the organ, when it is provided. The open roof has its timbers stained, and the spaces between filled in with plaster. The gallery-fronts are pierced with quatrefoils. The supporting pillars to the galleries, which are carried up to the roof, are coloured dark chocolate, and have their capitals relieved by colour and gilding. The small circular window at the north end (which will be over the organ), and the single-light window on either side, are filled in with quarried glass. The windows in the partition from the vestibule are similarly treated, whilst the traceried headings to the great window over the principal entrance are filled in with stained glass. All have been supplied by Mr. Barnet, of Newcastle. The chapel is lighted by ten gaseliers in brass, each having eighteen lights, and suspended, five on either side, and between the supporting pillars, to the roof. Beneath the galleries are large brackets, each with four lights. All these are from the works of Messrs. Hibbert & Co., of Manchester. The total accommodation gives 900 seats. In rear of the pulpit are large vestries and retiring-rooms, and a covered arcade leads directly into the large schoolrooms, built some years ago, behind the old chapel. The total cost of this chapel will be between 4,000*l.* and 5,000*l.*——South Parade Wesleyan Chapel after being closed for many months, during which time extensive alterations and improvements have been made both internally and externally, has been formally reopened. The alterations, which are extensive, involving an expenditure of over 2,300*l.*, have been carried out under the superintendence of Messrs. Ives & Son, architects. The old building has been so handled that all its leading features are retained, whilst at the same time the requirements and taste of more modern days has been fully met. Built in 1776, it is a plain edifice, having in its principal front two entrance-doors, with a square-headed window between, and one on the side of each door. Over these, in the second story, are windows to correspond; and along each side are five windows in each story. Formerly there were three rows of windows, the upper ones being small and square. These have been removed, and the gallery-windows lengthened, and converted into circular-headed ones. At the east end of the chapel a large apse or organ-recess has been thrown out, resting upon stone pillars, placed so as not to interfere with the graves. It is in the interior of the chapel that the greatest alteration has been made. The whole of the eastern gallery (which

held the organ) has been swept away, as well as the pulpit and its surroundings. The recess spoken of opens into the chapel by a moulded arch, having supporting pilasters on either side. Its dimensions are 22 ft. by 16 ft., and its height 18 ft. 6 in. to the spring of the roof. The new organ, now building by Messrs. Forster & Andrews, of Hull, will shortly be placed in it. In front of this recess, well advanced, and standing upon a broad platform two steps high, is the pulpit, 8 ft. in height. Round the raised platform is a mahogany rail, enclosing the communion space. The whole of the pews have been repainted and varnished, and the walls repainted in warm tints. The gallery-fronts have been painted, all in neutral tints, the prevailing colours being light grey, drab, and light blue, the panels being filled in with scroll-work, and the running moulds slightly gilded. On the ceiling, each of the large panels is filled in with a floriated design, and the large ventilators (nine in number) are decorated. Around the sides is a deep scroll-mould. Five coronæ (supplied by Messrs. Foster & Son, of Woolshops) are suspended from the ceiling. They are in brass and wrought iron. The central one has eighteen lights, and the four others twelve lights each. Beneath the galleries, running on the three sides of the chapel, are fourteen brackets, of four lights each. All the old glass of the windows has been removed, and now each light is in a single sheet of figured glass, having the Pompeian key-mould around the edges. In rear of the chapel, and on a level with the apse, is a large new vestry, whilst the old school-room beneath has been reboarded and panelled, and a new class-room formed out of it. The large school opening into the chapel, and which was built a few years ago, needed no alteration. Mr. Pickles has been the mason, Mr. Townsend the joiner, Mr. Ambler the plasterer, Mr. Naylor the plumber, and Messrs. White & Stringer the painters and decorators employed.

Chester.—Pepper-street Methodist New Connexion Chapel has been re-opened for divine service. This place of worship has undergone extensive alteration from its former half-primitive, half-modern appearance. The old benches in the body of the chapel have been removed, and supplanted by new pews, in harmony with the gallery and sides of the building. The pulpit has been lowered 1½ ft., and the stairs at the back are superseded by a flight of winding stairs on either side. Behind the pulpit are two Corinthian pillars supporting a semi-arch of the same style. No alteration has been made in the gallery, with the exception of the removal of the old perpendicular gaslights, which has been done in every part of the building, and sunlights or side-brackets introduced in their stead. The ceiling is beautified by an ornate sunlight, with centre flowers. The pews and the pulpit have been repainted, grained, and gilded. The whole of the work has been executed by Chester tradesmen, Mr. Robert Ellis doing the painting, Messrs. Farrimond & Co. the woodwork, and Mr. Bird the gasfitting. A double set of hot-water pipes run along the whole building. The accommodation which the chapel will now afford is sufficient for 1,200 persons, and the cost of the alterations, &c., amounts to about 350*l.*

Andover.—In the Congregational Chapel, old-fashioned high pews have been replaced by open seats of Oregon and red pine, varnished. The aisles have been laid in encaustic tiles, from the works of Mr. R. Minton Taylor, of Fenton; and the few old tombstones which were brought to light during the alterations to the boarded flooring are relaid in the aisles. The pulpit has an apparatus for transmitting the voice of the speaker to any part of the chapel, by means of tubes. The expense attending the alterations has been covered by the subscriptions, although there are a few incidentals towards which contributions will be asked at some future time. The work has been executed by Mr. Frank Beale, of this town, builder, who also prepared the plans and specifications.

Normanton.—A Methodist Free Church has been opened here, and is a substantial red brick building, with stone dressings, open stained roof, and stained deal fittings. It will seat 200 persons. Mr. William Watson, of Wakefield and Doncaster, was the architect; Mr. John Foster, of Normanton, was contractor for the whole work, for 710*l.*

Alverthorpe.—The building committee have instructed Mr. William Watson, architect, to prepare a design for a chapel and Sunday-schools for the Methodist Church of this place.

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FROM SCOTLAND.

Edinburgh.—The Tron Church has had its walls painted and the large west window filled with stained glass. The large east window, containing six upright lights, was filled two years ago with stained glass, containing six illustrations of the life of our Lord,—viz., the Annunciation to the Shepherds, the Worshipping of the Wise Men, the Presentation in the Temple, Christ among the Doctors, the Baptism, and the Sermon on the Mount. The large west window, which has just been executed, contains also six illustrations,—viz., Christ raising Lazarus, the Last Supper, the Agony in the Garden, the Crucifixion, the Marys at the Tomb, and the Ascension. In the top tracery of the one window is the *Agnus Dei* in the centre, with angels in side-lights; and in the tracery of the other is, in the centre, the Pelican, with angels in the side-lights. The remainder of both windows is filled with ornamental work, in accordance with the style of the architecture. The walls of the church have been painted a neutral green, diapered with borderings of brown and dark green. The ingoings and facings of the windows are of a drab colour, and these are also diapered with borderings in keeping with the glass in the windows. Messrs. Ballantine & Son decorated both the walls and the windows. The west window has been subscribed for by the Marquis of Tweeddale, Lord Lauderdale, and by relatives and friends of the late Rev. Dr. Hunter.

The operations connected with the erection of the new infirmary in Lauriston were recently all but suspended. The explanation is, that the builder had nearly completed the work embraced in the first contract, which was limited to the foundations and basement. Before entering upon a further contract, the managers deemed it expedient to obtain a report from Mr. Bryce, the architect for the buildings, showing in what way the design might be curtailed, so as considerably to reduce the estimated expenditure without prejudice to the ultimate carrying out of the plans in their entirety, so soon as it may seem desirable to do so.

The foundation-stone of the new Watt Institution and School of Arts, now in course of erection in Chambers-street, has been laid by the Earl of Rosslyn, Grand Master Mason of Scotland, with full Masonic honours. Opposite the main entrance to the Museum of Science and Art there will be an extended open space. The site of the new Watt Institution and School of Arts is at the west corner of this open space, and the building, which is to be in the Italian style of architecture, corresponding with the remainder of the buildings to be erected on the north side of Chambers-street, will therefore possess the advantage of having both a south and east front. The building will be two stories in height, except at the west end, where there will be a pavilion carried one story higher. The

south front, or that facing the Museum of Science and Art, will be rusticated on the ground floor, with balusters under the first-floor windows; while the second-floor windows will have architraves, trusses, and cornices, and the pavilion will have pilasters at each side, and decorated windows. Over the first floor will be the main cornice, furnished with dormer windows, which are intended as a feature in lighting the large lecture-hall. The main entrance will be at the west end, under the pavilion, and will be approached by a projecting porch, supported on pillars. The porch will be crowned with the statue of James Watt, after Chantrey's model, which at one time decorated Adam-square. The main entrance will lead to a spacious hall and grand staircase, from which access will be had to the lecture and class rooms, directors' room, library, masters' room, and keeper's house. The principal lecture-hall will be 88 ft. long, 33 ft. broad, and will be capable of accommodating 500 persons. It will be lighted by four large windows on either side; while in the division betwen the richly-decorated cone and the ceiling will be a row of lunette lights. At the east end of the hall will be a platform for the lecturers, and at the west end a gallery seated for 180 persons. The ceiling will be decorated with panelling of a rich character. Another hall for lectures and large classes will be 34 ft. long and 33 ft. wide, and the remaining accommodation will consist of a chemical class-room, 33 ft. by 23 ft.; a chemical laboratory and apparatus-room for mechanical philosophy; and two spacious class-rooms, for general purposes. The architect for the new institution is Mr. David Rhind, F.R.S.E., and the contractors are Messrs. David Sutherland & Son, Edinburgh.

Leith.—The United Presbyterian Church, St. Andrew's-place, Leith, has been undergoing an overhaul, and the congregation have taken advantage of the opportunity to place in the building permanent memorials of the two pastors with whom the history of the church is identified. The re-painting has been executed by Mr. Paxton, of Edinburgh. A brown tint on the walls affords a background for the work of the decorator. The panels of the ceiling are painted in pale blue with gold stars. A ventilator in the middle of the ceiling takes the form of an elaborate centre-piece, painted in brown and cream colour, and gilded. The windows are encircled with bands of diaper-work, the glass being obscured by being painted in light colours to a corresponding pattern. In the case of the two large windows flanking the pulpit, the ornamental border takes a more ornate form, with gilding. The front of the galleries is painted in wainscot, the surface being diversified with moulded panels and stencil ornament. The two large windows behind the pulpit have been turned to account to enhance the decorative effect, while serving as memorials of the pastors. Furnished with new stone mullions, which form in each case two round-headed lights, surmounted by a small circle, the windows have been filled in with coloured glass by Mr. Barnett, of Leith. In addition to the memorial window, a mural monument has been erected to the memory of Dr. Smart, in the lobby of the church. The work was designed by Mr. Brodie, R.S.A. Over a simple plinth, supported on two square corbels, rises a plain slab, in the centre of which, within a deeply-moulded circular panel, is placed a medallion of Dr. Smart in high relief. An outline resembling that of a Grecian pediment completes the monument at top. The whole is in marble, but the architectural portion is blue-veined white, and the medallion pure white. While decorating and improving their church, the St. Andrew's-place congregation have taken steps for providing themselves with a hall in which Sunday school and prayer-meetings may be conveniently held. A new building, designed by Mr. Paterson, of Edinburgh, is being erected in close proximity to the church, with which it corresponds in point of style. Internally its principal, indeed only, feature is a spacious and lofty apartment, well lighted from two sides, and capable of comfortably seating about 300 persons. Waiting-rooms are provided behind. A new vestry is also being built in rear of the church.

Broxburn.—The memorial stone of a public hall and working men's institute for the village of Broxburn has been laid. Mr. R. Bell, of Broxburn Lodge, and a number of the leading men in the village, instituted some time ago a working men's club, with the view of providing or the somewhat restless mining population means of harmless and agreeable amusement. The club proved a great success, and, encouraged by this, Mr. Bell, Mr. Maclagan, M.P., and other proprietors and employers in the neighbourhood, projected a public hall and institute on a somewhat larger and more imposing scale. Plans were accordingly procured, and operations commenced, and the memorial stone of the institution was laid with full Masonic honours by Lord Cardross. The site of the building is near the centre of the village, and will form a prominent feature in its one long straggling street. The erection will be a simple oblong building, with Gothic details. The main front will show a gable end towards the street, having a tower at the south-west corner rising to a height of 50 ft., finished with a wedge-shaped roof, tipped with ornamental cresting. Access will be gained to the building by two entrances,—one leading to the billiard and reading rooms, which will be situated on the ground floor, and measure 31 ft. by 26 ft. The other entrance will be placed at the basement of the tower, and give immediate access to the hall, which will be placed on the first floor. Extending to 60 ft. by 31 ft., the hall will be seated for 500 persons, and provided with a platform. The architect is Mr. James Fairley, Edinburgh; and the contractors are,—for the mason work, Mr. J. Rennie, Newbridge; and for the joiner work, Mr. W. Brown, Dechmont. The cost of the entire building will be about 1,300*l.*

Glasgow.—The foundation stone of a United Presbyterian Church has been laid in Glasgow. The new building is being erected in Elgin-street, off Eglinton-street. The church is in the Gothic style of architecture, and is constructed so that a spire may be added if required. It is about 70 ft. square, exclusive of the session-house, vestry, &c., which abut on the east side. The interior of the church will be ornamental. A spacious gallery will run round the sides and back, and underneath it the ground seats sweep round in the form of a horse-shoe. The body of the church is divided by two aisles. Underneath are the halls, the roofs of which are supported by cast-iron pillars. The building is estimated to accommodate 1,100 persons, and when completed will cost about 5,000*l.*

STAINED GLASS.

All Saints', Wath-on-Dearne.—An addition has been made to this parish church by the erection of two stained glass windows in the south aisle. They are of two lights each and of large size, and are designed in the style of the Tudor period. In one window, on a foliated ground, are shields and other heraldic devices, while in the other, on likewise a rich ground of foliated work, are medallions of angels holding texts. The windows have been made by Lavers, Barraud, & Westlake, of London, from a design by Mr. Bentley. The stonework of these windows has been restored, the whole having been directed by Messrs. W. Hadfield & Son, the architects, whom the donor, Mr. G. P. Nicholson, of Wath-on-Dearne, employed on the work.

All Saints', Acton.—Three of the windows in the east bay of this church have been filled with stained glass, in memory of the late Mrs. Mary Anne Dunn, the mother of the vicar (with the exception of the centre window, which contains the Ascension and Crucifixion of our Lord, with canopies and bases, and with the Majesty in the tracery). The subjects chosen are characteristic of different saintships: for instance, under the head of the saintship of Infant Innocence, we have Christ receiving little children, and the infant Saviour disputing with the doctors; for the saintship Self-renunciation, St. John the Baptist preaching and baptising in the wilderness; for the saintship of Motherhood, the salutation of the Virgin and the nativity of our Lord; for the saintship of the Gift of God, St. Peter and St. John healing the man at the gate called Beautiful, and the descent of the Holy Ghost. These windows are from the studio of Powell, Bros., of Leeds.

Bath Abbey Church.—The last of the windows of the north aisle of this church has been filled with stained glass by Messrs. Clayton, Bell, & Co. The window is the gift of Mr. Thomas Gill. It is divided into five lights, with tracery above, the central light being occupied by a figure of the prophetess Miriam, and the four other subjects are Hannah praying in the Temple, the finding of Moses, Mary at the feet of our Lord, and the Marys at the Tomb.

Melton Church.—A new stained-glass window has just been placed in the east window of the parish church, the gift of Mr. James Packe, of The Lodge. The window is a three-light Gothic, with geometric tracery. There are six subjects, two in each light, representing the "Last Supper," the "Agony in the Garden," the "Betrayal," "Bearing the Cross," the "Crucifixion," and the "Descent from the Cross." The whole of the groundwork is filled with designs, and the lights are surrounded by a foliated border, and have respectively at the top of the sacred monogram the interlaced triangles of the Eternal Trinity, and the X P C, or Greek monogram of Christ. The tracery above the lights is filled in with floral, foliated, and geometric devices. The work was done by Messrs. Ward & Hughes, of London, who, we understand, received a *carte blanche* as to price from the donor.

St. Clement's, Cambridge.—This parish church has just been enriched by a stained-glass window, made and presented by Mr. W. H. Constable. During the summer this work of art was exhibited in the International Exhibition.

Leesfield Church.—The single-light window on the north side of the chancel of this church has just been filled with stained glass in memory of Mr. Higson. The subject represented is the parable of the talents. The window is from the works of Mr. Shaw, of Saddleworth. Another stained window, also from the works of Mr. Shaw, has been placed under the gallery at the west end of the north aisle of the church. It consists of two short lights. In the first light is a circle surrounded with a wreath of vine-leaves, inclosing the monogram "I. H. S." In the second light is a similar circle, inclosing a cross. Running round the two circles are the words, "Him that cometh unto me I will in no wise cast out." The ground-work of the window consists of oak-leaves and acorns.

Cirencester Parish Church.—A window has been placed in the lady chapel of this church by Mr. T. W. C. Master, of the Abbey. The window represents the principal points in the histories of the Marys mentioned in the New Testament, and has been executed by Messrs. Hardman & Co., of Birmingham.

Books Received.

A Handbook of Chemical Technology. By RUDOLF WAGNER, Ph.D., Professor of Chemical Technology in the University of Wurtzburg. Translated and edited from the eighth German edition, with extensive additions. By WILLIAM CROOKES, F.R.S. With 336 illustrations. London: Churchill, New Burlington-street. 1872.

IN this valuable and important work there is a great variety of topics, many of them of special interest to our readers. The technology of glass, limes, and mortars; the preservation of wood; the latest methods of preparing iron, zinc, lead, copper; and technology of heating and illumination, are among these; and there are under these and other headings many subjects dealt with, such as the manufacture of bricks and tiles, terra-cotta, &c.; of porcelain and other wares; oils and resins; colours; varnishes; picture restoring; cements; glues; dyes; and many other materials in the technology of vegetable matters, such as paper-making; bread-baking; beer-brewing; and of animal matters, as of silk, wool, and preservation of meat.

We shall on another occasion give some extracts in a separate form on the subject of glass, as a specimen of the thorough mode of treatment which seems to be adopted throughout the work.

VARIORUM.

A USEFUL little volume, titled "Sanitary Science," has been published at a moderate price by Mr. R. Scott Burn (Glasgow and London: W. Collins, Sons, & Co.), on the principles of sanitary science. Starting with a motto which is taken from Lord Derby's recent speech at Liverpool, that "sanitary instruction is even more necessary than sanitary legislation," he proceeds to develop briefly, yet perspicuously, the general sanitary conditions of town and country districts; adding a separate essay on the various subjects involved, such as healthy construction of houses; heating and ventilation; the smoke nuisance; water supply; and disposal of sewage. The illustrations, as far as they go, are appropriate and well selected.

held the organ) has been swept away, as well as the pulpit and its surroundings. The recess spoken of opens into the chapel by a moulded arch, having supporting pilasters on either side. Its dimensions are 22 ft. by 16 ft., and its height 18 ft. 6 in. to the spring of the roof. The new organ, now building by Messrs. Forster & Andrews, of Hull, will shortly be placed in it. In front of this recess, well advanced, and standing upon a broad platform two steps high, is the pulpit, 8 ft. in height. Round the raised platform is a mahogany rail, enclosing the communion space. The whole of the pews have been repainted and varnished, and the walls repainted in warm tints. The gallery-fronts have been painted, all in neutral tints, the prevailing colours being light grey, drab, and light blue, the panels being filled in with scroll-work, and the running moulds slightly gilded. On the ceiling, each of the large panels is filled in with a floriated design, and the large ventilators (nine in number) are decorated. Around the sides is a deep scroll-mould. Five coronæ (supplied by Messrs. Foster & Son, of Woolshops) are suspended from the ceiling. They are in brass and wrought iron. The central one has eighteen lights, and the four others twelve lights each. Beneath the galleries, running on the three sides of the chapel, are fourteen brackets, of four lights each. All the old glass of the windows has been removed, and now each light is in a single sheet of figured glass, having the Pompeian key-mould around the edges. In rear of the chapel, and on a level with the apse, is a large new vestry, whilst the old school-room beneath has been reboarded and panelled, and a new class-room formed out of it. The large school opening into the chapel, and which was built a few years ago, needed no alteration. Mr. Pickles has been the mason, Mr. Townsend the joiner, Mr. Ambler the plasterer, Mr. Naylor the plumber, and Messrs. White & Stringer the painters and decorators employed.

Chester.—Pepper-street Methodist New Connexion Chapel has been re-opened for divine service. This place of worship has undergone extensive alteration from its former half-primitive, half-modern appearance. The old benches in the body of the chapel have been removed, and supplanted by new pews, in harmony with the gallery and sides of the building. The pulpit has been lowered 1½ ft., and the stairs at the back are superseded by a flight of winding stairs on either side. Behind the pulpit are two Corinthian pillars supporting a semi-arch of the same style. No alteration has been made in the gallery, with the exception of the removal of the old perpendicular gaslights, which has been done in every part of the building, and sunlights or side-brackets introduced in their stead. The ceiling is beautified by an ornate sunlight, with centre flowers. The pews and the pulpit have been repainted, grained, and gilded. The whole of the work has been executed by Chester tradesmen, Mr. Robert Ellis doing the painting, Messrs. Farrimond & Co. the woodwork, and Mr. Bird the gasfitting. A double set of hot-water pipes run along the whole building. The accommodation which the chapel will now afford is sufficient for 1,200 persons, and the cost of the alterations, &c., amounts to about 350*l.*

Andover.—In the Congregational Chapel, old-fashioned high pews have been replaced by open seats of Oregon and red pine, varnished. The aisles have been laid in encaustic tiles, from the works of Mr. R. Minton Taylor, of Fenton; and the few old tombstones which were brought to light during the alterations to the boarded flooring are relaid in the aisles. The pulpit has an apparatus for transmitting the voice of the speaker to any part of the chapel, by means of tubes. The expense attending the alterations has been covered by the subscriptions, although there are a few incidentals towards which contributions will be asked at some future time. The work has been executed by Mr. Frank Beale, of this town, builder, who also prepared the plans and specifications.

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Higham Ferrers.—The foundation has been commenced to be laid for the new Board Schools by Mr. John Piggott, of Rushden, the contractor for the masonry. Mr. George Smith, of Higham Ferrers, is to do the carpentering; and Mr. Albert Laughton, Rushden, the painting and glazing. The expenditure will be 2,000*l.* in addition to the purchase of the land. The schools will face Wharf-lane, and have a playground in front. They are to be completed by Midsummer next.

FROM SCOTLAND.

Edinburgh.—The Tron Church has had its walls painted and the large west window filled with stained glass. The large east window, containing six upright lights, was filled two years ago with stained glass, containing six illustrations of the life of our Lord,—viz., the Annunciation to the Shepherds, the Worshipping of the Wise Men, the Presentation in the Temple, Christ among the Doctors, the Baptism, and the Sermon on the Mount. The large west window, which has just been executed, contains also six illustrations,—viz., Christ raising Lazarus, the Last Supper, the Agony in the Garden, the Crucifixion, the Marys at the Tomb, and the Ascension. In the top tracery of the one window is the *Agnus Dei* in the centre, with angels in side-lights; and in the tracery of the other is, in the centre, the Pelican, with angels in the side-lights. The remainder of both windows is filled with ornamental work, in accordance with the style of the architecture. The walls of the church have been painted a neutral green, diapered with borderings of brown and dark green. The ingoings and facings of the windows are of a drab colour, and these are also diapered with borderings in keeping with the glass in the windows. Messrs. Ballantine & Son decorated both the walls and the windows. The west window has been subscribed for by the Marquis of Tweeddale, Lord Lauderdale, and by relatives and friends of the late Rev. Dr. Hunter.

The operations connected with the erection of the new infirmary in Lauriston were recently all but suspended. The explanation is, that the builder had nearly completed the work embraced in the first contract, which was limited to the foundations and basement. Before entering upon a further contract, the managers deemed it expedient to obtain a report from Mr. Bryce, the architect for the buildings, showing in what way the design might be curtailed, so as considerably to reduce the estimated expenditure without prejudice to the ultimate carrying out of the plans in their entirety, so soon as it may seem desirable to do so.

The foundation-stone of the new Watt Institution and School of Arts, now in course of erection in Chambers-street, has been laid by the Earl of Rosslyn, Grand Master Mason of Scotland, with full Masonic honours. Opposite the main entrance to the Museum of Science and Art there will be an extended open space. The site of the new Watt Institution and School of Arts is at the west corner of this open space, and the building, which is to be in the Italian style of architecture, corresponding with the remainder of the buildings to be erected on the north side of Chambers-street, will therefore possess the advantage of having both a south and east front. The building will be two stories in height, except at the west end, where there will be a pavilion carried one story higher. The

south front, or that facing the Museum of Science and Art, will be rusticated on the ground floor, with balusters under the first-floor windows; while the second-floor windows will have architraves, trusses, and cornices, and the pavilion will have pilasters at each side, and decorated windows. Over the first floor will be the main cornice, furnished with dormer windows, which are intended as a feature in lighting the large lecture-hall. The main entrance will be at the west end, under the pavilion, and will be approached by a projecting porch, supported on pillars. The porch will be crowned with the statue of James Watt, after Chantrey's model, which at one time decorated Adam-square. The main entrance will lead to a spacious hall and grand staircase, from which access will be had to the lecture and class rooms, directors' room, library, masters' room, and keeper's house. The principal lecture-hall will be 88 ft. long, 33 ft. broad, and will be capable of accommodating 500 persons. It will be lighted by four large windows on either side; while in the division betwen the richly-decorated cone and the ceiling will be a row of lunette lights. At the east end of the hall will be a platform for the lecturers, and at the west end a gallery seated for 180 persons. The ceiling will be decorated with panelling of a rich character. Another hall for lectures and large classes will be 34 ft. long and 33 ft. wide, and the remaining accommodation will consist of a chemical class-room, 33 ft. by 23 ft.; a chemical laboratory and apparatus-room for mechanical philosophy; and two spacious class-rooms, for general purposes. The architect for the new institution is Mr. David Rhind, F.R.S.E., and the contractors are Messrs. David Sutherland & Son, Edinburgh.

Leith.—The United Presbyterian Church, St. Andrew's-place, Leith, has been undergoing an overhaul, and the congregation have taken advantage of the opportunity to place in the building permanent memorials of the two pastors with whom the history of the church is identified. The re-painting has been executed by Mr. Paxton, of Edinburgh. A brown tint on the walls affords a background for the work of the decorator. The panels of the ceiling are painted in pale blue with gold stars. A ventilator in the middle of the ceiling takes the form of an elaborate centre-piece, painted in brown and cream colour, and gilded. The windows are encircled with bands of diaper-work, the glass being obscured by being painted in light colours to a corresponding pattern. In the case of the two large windows flanking the pulpit, the ornamental border takes a more ornate form, with gilding. The front of the galleries is painted in wainscot, the surface being diversified with moulded panels and stencil ornament. The two large windows behind the pulpit have been turned to account to enhance the decorative effect, while serving as memorials of the pastors. Furnished with new stone mullions, which form in each case two round-headed lights, surmounted by a small circle, the windows have been filled in with coloured glass by Mr. Barnett, of Leith. In addition to the memorial window, a mural monument has been erected to the memory of Dr. Smart, in the lobby of the church. The work was designed by Mr. Brodie, R.S.A. Over a simple plinth, supported on two square corbels, rises a plain slab, in the centre of which, within a deeply-moulded circular panel, is placed a medallion of Dr. Smart in high relief. An outline resembling that of a Grecian pediment completes the monument at top. The whole is in marble, but the architectural portion is blue-veined white, and the medallion pure white. While decorating and improving their church, the St. Andrew's-place congregation have taken steps for providing themselves with a hall in which Sunday school and prayer-meetings may be conveniently held. A new building, designed by Mr. Paterson, of Edinburgh, is being erected in close proximity to the church, with which it corresponds in point of style. Internally its principal, indeed only, feature is a spacious and lofty apartment, well lighted from two sides, and capable of comfortably seating about 300 persons. Waiting-rooms are provided behind. A new vestry is also being built in rear of the church.

Broxburn.—The memorial stone of a public hall and working men's institute for the village of Broxburn has been laid. Mr. R. Bell, of Broxburn Lodge, and a number of the leading men in the village, instituted some time ago a working men's club, with the view of providing or the somewhat restless mining population means of harmless and agreeable amusement. The club proved a great success, and, encouraged by this, Mr. Bell, Mr. Maclagan, M.P., and other proprietors and employers in the neighbourhood, projected a public hall and institute on a somewhat larger and more imposing scale. Plans were accordingly procured, and operations commenced, and the memorial stone of the institution was laid with full Masonic honours by Lord Cardross. The site of the building is near the centre of the village, and will form a prominent feature in its one long straggling street. The erection will be a simple oblong building, with Gothic details. The main front will show a gable end towards the street, having a tower at the south-west corner rising to a height of 50 ft., finished with a wedge-shaped roof, tipped with ornamental cresting. Access will be gained to the building by two entrances,—one leading to the billiard and reading rooms, which will be situated on the ground floor, and measure 31 ft. by 26 ft. The other entrance will be placed at the basement of the tower, and give immediate access to the hall, which will be placed on the first floor. Extending to 60 ft. by 31 ft., the hall will be seated for 500 persons, and provided with a platform. The architect is Mr. James Fairley, Edinburgh; and the contractors are,—for the mason work, Mr. J. Rennie, Newbridge; and for the joiner work, Mr. W. Brown, Dechmont. The cost of the entire building will be about 1,300*l.*

Glasgow.—The foundation stone of a United Presbyterian Church has been laid in Glasgow. The new building is being erected in Elgin-street, off Eglinton-street. The church is in the Gothic style of architecture, and is constructed so that a spire may be added if required. It is about 70 ft. square, exclusive of the session-house, vestry, &c., which abut on the east side. The interior of the church will be ornamental. A spacious gallery will run round the sides and back, and underneath it the ground seats sweep round in the form of a horse-shoe. The body of the church is divided by two aisles. Underneath are the halls, the roofs of which are supported by cast-iron pillars. The building is estimated to accommodate 1,100 persons, and when completed will cost about 5,000*l.*

STAINED GLASS.

All Saints', Wath-on-Dearne.—An addition has been made to this parish church by the erection of two stained glass windows in the south aisle. They are of two lights each and of large size, and are designed in the style of the Tudor period. In one window, on a foliated ground, are shields and other heraldic devices, while in the other, on likewise a rich ground of foliated work, are medallions of angels holding texts. The windows have been made by Lavers, Barraud, & Westlake, of London, from a design by Mr. Bentley. The stonework of these windows has been restored, the whole having been directed by Messrs. W. Hadfield & Son, the architects, whom the donor, Mr. G. P. Nicholson, of Wath-on-Dearne, employed on the work.

All Saints', Acton.—Three of the windows in the east bay of this church have been filled with stained glass, in memory of the late Mrs. Mary Anne Dunn, the mother of the vicar (with the exception of the centre window, which contains the Ascension and Crucifixion of our Lord, with canopies and bases, and with the Majesty in the tracery). The subjects chosen are characteristic of different saintships: for instance, under the head of the saintship of Infant Innocence, we have Christ receiving little children, and the infant Saviour disputing with the doctors; for the saintship Self-renunciation, St. John the Baptist preaching and baptising in the wilderness; for the saintship of Motherhood, the salutation of the Virgin and the nativity of our Lord; for the saintship of the Gift of God, St. Peter and St. John healing the man at the gate called Beautiful, and the descent of the Holy Ghost. These windows are from the studio of Powell, Bros., of Leeds.

Bath Abbey Church.—The last of the windows of the north aisle of this church has been filled with stained glass by Messrs. Clayton, Bell, & Co. The window is the gift of Mr. Thomas Gill. It is divided into five lights, with tracery above, the central light being occupied by a figure of the prophetess Miriam, and the four other subjects are Hannah praying in the Temple, the finding of Moses, Mary at the feet of our Lord, and the Marys at the Tomb.

Melton Church.—A new stained-glass window has just been placed in the east window of the parish church, the gift of Mr. James Packe, of The Lodge. The window is a three-light Gothic, with geometric tracery. There are six subjects, two in each light, representing the "Last Supper," the "Agony in the Garden," the "Betrayal," "Bearing the Cross," the "Crucifixion," and the "Descent from the Cross." The whole of the groundwork is filled with designs, and the lights are surrounded by a foliated border, and have respectively at the top of the sacred monogram the interlaced triangles of the Eternal Trinity, and the X P C, or Greek monogram of Christ. The tracery above the lights is filled in with floral, foliated, and geometric devices. The work was done by Messrs. Ward & Hughes, of London, who, we understand, received a *carte blanche* as to price from the donor.

St. Clement's, Cambridge.—This parish church has just been enriched by a stained-glass window, made and presented by Mr. W. H. Constable. During the summer this work of art was exhibited in the International Exhibition.

Leesfield Church.—The single-light window on the north side of the chancel of this church has just been filled with stained glass in memory of Mr. Higson. The subject represented is the parable of the talents. The window is from the works of Mr. Shaw, of Saddleworth. Another stained window, also from the works of Mr. Shaw, has been placed under the gallery at the west end of the north aisle of the church. It consists of two short lights. In the first light is a circle surrounded with a wreath of vine-leaves, inclosing the monogram "I. H. S." In the second light is a similar circle, inclosing a cross. Running round the two circles are the words, "Him that cometh unto me I will in no wise cast out." The ground-work of the window consists of oak-leaves and acorns.

Cirencester Parish Church.—A window has been placed in the lady chapel of this church by Mr. T. W. C. Master, of the Abbey. The window represents the principal points in the histories of the Marys mentioned in the New Testament, and has been executed by Messrs. Hardman & Co., of Birmingham.

Books Received.

A Handbook of Chemical Technology. By RUDOLF WAGNER, Ph.D., Professor of Chemical Technology in the University of Wurtzburg. Translated and edited from the eighth German edition, with extensive additions. By WILLIAM CROOKES, F.R.S. With 336 illustrations. London: Churchill, New Burlington-street. 1872.

IN this valuable and important work there is a great variety of topics, many of them of special interest to our readers. The technology of glass, limes, and mortars; the preservation of wood; the latest methods of preparing iron, zinc, lead, copper; and technology of heating and illumination, are among these; and there are under these and other headings many subjects dealt with, such as the manufacture of bricks and tiles, terra-cotta, &c.; of porcelain and other wares; oils and resins; colours; varnishes; picture restoring; cements; glues; dyes; and many other materials in the technology of vegetable matters, such as paper-making; bread-baking; beer-brewing; and of animal matters, as of silk, wool, and preservation of meat.

We shall on another occasion give some extracts in a separate form on the subject of glass, as a specimen of the thorough mode of treatment which seems to be adopted throughout the work.

VARIORUM.

A USEFUL little volume, titled "Sanitary Science," has been published at a moderate price by Mr. R. Scott Burn (Glasgow and London: W. Collins, Sons, & Co.), on the principles of sanitary science. Starting with a motto which is taken from Lord Derby's recent speech at Liverpool, that "sanitary instruction is even more necessary than sanitary legislation," he proceeds to develop briefly, yet perspicuously, the general sanitary conditions of town and country districts; adding a separate essay on the various subjects involved, such as healthy construction of houses; heating and ventilation; the smoke nuisance; water supply; and disposal of sewage. The illustrations, as far as they go, are appropriate and well selected.

Miscellanea.

The Metropolitan Water Companies.—In accordance with the Act of Parliament passed last session, the water companies of London have issued their balance-sheets for the last year, and these have been embodied in an official return. From this it appears, says the *Times*, that the capital of the West Middlesex Water Company is 885,712*l.*; gross revenue, 125,915*l.*; net revenue, 85,197*l.* The gross earnings were thus 14*l.* 4s. 4d. per cent. on the capital; 32*l.* 6s. 9d. per cent. of the gross receipts were absorbed by the working expenses, of which which 23*l.* 9s. 3d. were for maintenance, and 8*l.* 17s. 6d. for management, leaving 67*l.* 13s. 3d. per cent. on the gross receipts available for division, which is at the rate of 9*l.* 12s. 4d. per cent. on the capital. The capital of the Kent Water Company is 477,011*l.*; gross revenue, 62,130*l.*; net revenue, 40,315*l.* The gross earnings were thus 10*l.* 12s. 9d. per cent. on the capital; 35*l.* 2s. 3d. per cent. of the gross receipts were absorbed by the working expenses, of which 27*l.* 2s. 8d. were for maintenance, and 7*l.* 19s. 7d. for management, leaving 64*l.* 17s. 9d. per cent. of the gross receipts available for division, which is at the rate of 8*l.* 9s. per cent. on the capital. The capital of the New River Company is 2,651,975*l.*; gross revenue, 311,664*l.*; net revenue, 196,251*l.* The gross earnings were thus 11*l.* 15s. 1d. per cent. on the capital; 37*l.* 0s. 7d. per cent. of the gross receipts were absorbed by the working expenses, of which 27*l.* 11s. 9d. were for maintenance, and 9*l.* 8s. 10d. for management, leaving 62*l.* 19s. 5d. per cent. on the gross receipts available for division, which is at the rate of 7*l.* 8s. per cent. on the capital. The total capital of the eight companies of which details are given is 10,008,310*l.*; gross revenue, 1,058,556*l.*; net revenue, 666,608*l.* The gross earnings thus averaged 10*l.* 11s. 6d. per cent. on the capital; net earnings, 6*l.* 13s. 2d. per cent.

Metropolitan Assessments.—The Lewisham Board of Guardians, according to the *Metropolitan*, have submitted a series of questions to the clerks of the Assessment Committees of the metropolitan parishes and unions respecting the Valuation (Metropolis) Act, 1869. To the question, "On what principle is property held on lease without premium, assessed, as distinguished from property held from year to year?" the clerk of Camberwell replies, "By adding 10*l.* per cent. to rent." In Chelsea, "the rent paid of a recent letting, and considered the fair market value, is taken as the rateable value, and the value of repairs, &c., added to ascertain the gross value." In Hampstead, "5*l.* per cent. is added to rent." In Islington, "each case is considered on its merits." In Kensington, the practice is "to add 5*l.* per cent. to rent, except on new properties of 40*l.* and upwards." In Paddington, "the estimated cost of repairs is added to rent." In St. Pancras, they "add 5*l.* to 10*l.* per cent. to rent, if lease is granted within seven years; and the value of an old lease is judged from adjoining property." In Shoreditch, "no hard-and-fast line is adopted; the property in the parish is of a varied character, and the gross value is arrived at in the best way we can." In Fulham Union, the assessment is made "on the assumption that the real does not represent the gross value." In Greenwich, "10*l.* per cent., if repairing lease; if not, 5*l.* or less, according to circumstances." In Hackney Union, "the rent is deemed to be rateable value, and the percentage fixed by the Act is added to it to ascertain the gross value." In Holborn, "a fair average amount is added for repairs; the amount paid for insurance, and the average of the landlord's taxes paid by tenant."

The Canterbury Town Sewage.—The Local Board have received three tenders for taking a concession of the sewage, in only one of which anything was offered for the sewage, and that was conditionally, that if any profit resulted, the Board should have 10 per cent. of that profit. The tenderers in this case were Messrs. Shelford & Robinson. In the other two cases the tenderers required annual payments to them of 750*l.* and 1,000*l.* respectively. The Board, after some further discussion, agreed that the tenders of Messrs. Anderson & Goodwin and Messrs. Banks & Walker be not entertained, and that the meeting should be adjourned for a fortnight, in order that the surveyor might report upon the remaining tender. Messrs. Shelford & Robinson propose to introduce the Dugald Campbell patent manure system.

Aspect for a Conservatory.—I have often heard the remark, "I would build a conservatory, but have no proper place for one,"—meaning, no south aspect. Now, however right it may be to build fruit-houses with an aspect direct south, I think it is the worst possible one for a conservatory. In the first place it certainly does not add to the pleasure of any one looking at plants in a glasshouse to be exposed to a hot sun, and still less to those working amongst them. Then, again, flowers, even when shaded by blinds, soon drop their petals in such a house, and many plants, as camellias, ferns, &c., seldom do well, however shaded. About two years ago, I built a house 100 ft. long, with an aspect due north, and a high back wall about 10 ft. This house has been full of zonal geraniums which have been in bloom ever since last April, and have been the admiration of all who have seen them; and though it is now November, and they have been blooming more than half a year, they are still in full beauty. The question is, would they have done so well in a house facing the south? I think not; though perhaps such a house would suit them better during the winter. If such sun-loving plants as geraniums will do well in a north house, there are but few plants which could not be cultivated in it. Were I to build a camellia house, I would face it to the north-east, so as to avoid the afternoon sun even, as few plants dislike a hot sun more than camellias do. Some may, therefore, be glad to know that a south aspect is not necessary for every kind of glass house.—*The Garden.*

House Property in Melbourne, Australia. The prices realised at a recent auction sale, says the local *Argus*, show the value of freehold property here. An allotment in Flinders-lane, near Elizabeth-street, of 26 ft. frontage by 96 ft. in depth, on which is erected a bluestone store, was sold for 7,050*l.*, or about 270*l.* a foot frontage. Premises in Flinders-lane, near Market-street, which possess a frontage of 59 ft. by a depth of 129 ft., fetched 6,000*l.* Two shops in Little Collins-street, near the Police Court, were sold for 2,450*l.*; and the Enniscorthy Hotel, in Little Bourke-street, with a frontage of 27 ft. by 40 ft., realised 1,650*l.* The allotment at the corner of King and Little Collins streets, 94 ft. by 99 ft., brought 3,300*l.*, or 35*l.* per foot frontage. The buildings on this ground were but of little value. Other property in Little Collins-street was sold for 17*l.* per foot. A piece of land, possessing a frontage of 62 ft. to Spencer-street, and 112 ft. to Dudley-street, was sold for 1,285*l.*, and 60 acres of the Yar-Orrong estate, at Toorak, subdivided into building allotments, fetched 10,000*l.* There was a spirited competition for the various properties, and the sale realised over 35,000*l.*

The Improvements in Holborn Valley.—It appears from the report presented to the Court of Common Council by Mr. Shaw, chairman of the Improvement Committee, that from the date when the tenders were accepted until the undertaking was completed the time occupied was just three years and a half, and that the entire cost amounted in round numbers, to 2,500,000*l.* Of this sum only 335,166*l.* were expended on the actual works themselves; the remainder of more than two millions sterling was laid out chiefly in the purchase of land, and compensation to tenants. It is calculated that the value of the land now in the hands of the corporation is not less than a million and a half. There has therefore been really sunk upon the improvement a million. Already the corporation are beginning to receive an income from the property. In January last the total rental was no more than 7,000*l.* a year; now it is as much as 29,000*l.* a year; and, as a matter of course it will rapidly increase every year.

Interesting Discoveries in the Aleutian Islands.—Dr. W. H. Dall, of the U.S. Coast Survey, has been making explorations of late among the Aleutian Islands of Russia, in the North Pacific Ocean; and has discovered various ancient remains of natives, such as lamps, knives, spoons, arrow-heads, hearthstones, and skeletons. Around the sites of ancient villages he found several specimens of peculiar ways of burial. In certain places a sort of cave was formed under overhanging rocks, and here were put the bodies of the dead, preserved, attitudinised, and gaily dressed out. Some of them were covered entirely with wooden armour. Occasionally the cave had a theatrical appearance: the bodies of renowned hunters were placed in canoes, armed, and apparently rowing. Women were represented engaged in the labours of their lives,—sewing, dressing skins, or holding their children.

Alleged Protection of Crops from Frost. The manufacture of artificial clouds is reported to have been resorted to in the French wine-growing districts, to protect the crops from frost. Tin receivers, filled with a peculiarly prepared tar, were disposed over an area of many acres, and when the tar was ignited thick white clouds rose into the atmosphere, and, spreading out evenly over a large region, remained suspended several yards above the soil. In seasons when frost is feared, the tar clouds would interpose between the crops and the sky, thus checking the night radiation which often causes such ravages in vineyards and gardens, both in spring and harvest time. By the way, we hear no more of the alleged protection of the hop crops from hail, which was talked of, and said to be practised some years since.

Fall of a House in Kensington.—Preparations for the erection of new buildings for postal, money-order, and telegraph purposes in Young-street, Kensington, have necessitated the demolition of a large house in the street, and the excavation of a deep foundation. The majority of the houses in the street are very old, but as the contractors had pinned and shored them up, they still continued occupied. One of these houses was occupied by a greengrocer and his family, and at about half-past two in the morning his wife was awakened by a creaking noise. She had just time to arouse and get out her husband (who is partially paralysed) and her family, when the house fell, burying their furniture and stock-in-trade in the ruins.

Society of Engineers.—At the annual general meeting of this society, the balloting lists were handed to the scrutineers, who ultimately reported that the choice of members had fallen on Mr. Church as president; Messrs. J. H. Adams, W. MacGeorge, and V. Pendred, as vice-presidents. Eight other members of council were also elected. Mr. A. Williams was re-elected hon. secretary and treasurer; and Mr. J. Walker was elected auditor. It was announced that the council had awarded premiums of books to the following members for papers read by them during the past session, viz.:—Mr. E. G. Bartholomew, Mr. W. H. Fox, and Mr. H. Davey.

Bath Abbey.—The eighth annual meeting of the subscribers to the Abbey Restoration Fund was held on Monday afternoon, the 9th, at Bath, the Mayor presiding. A very satisfactory report was read, and the chairman congratulated the subscribers upon the approaching completion of the work, and hoped the sum now necessary would be raised in the ensuing year. The third and last portion of the work is estimated to cost 6,000*l.*, which sum would be somewhat exceeded. Other special works are also projected, such as Corporation pews and stained-glass windows, but it was hoped that the choir would be open for worship in the spring. The usual resolutions were adopted.

Experiments with Acids on Stone.—At a recent meeting of the Manchester Literary and Philosophical Society, Dr. R. Angus Smith, F.R.S., said that he, like others, had observed that the particles of stone most liable to be in long contact with rain from town atmospheres, in England at least, were most subject to decay. Believing the acid to be the cause, he supposed that the endurance of a silicious stone might be somewhat measured by measuring its resistance to acids. He proposed, therefore, to use stronger solutions, and thus to approach to the action of long periods of time. He tried a few experiments, and he says with promising results.

A "Right of Way" Question.—A commotion was raised in the parish of St. Michael, Cornhill, last week, from an attempt on the part of the trustees of the parish to raise a strong barrier across a part of St. Michael's-alley, with a view to obstruct a disputed "right of way." Resistance of a similar nature, says the *City Press*, was brought to bear, each party having forty to fifty workmen engaged in the struggle, mostly bricklayers and carpenters. On an application to the City inspector of pavements, he had a detachment of the City police brought on the ground, and they stopped violence.

Rotterdam.—It seems likely that a new town will be built on the other side of the river. The Rotterdam Commercial Company (with a capital of fifteen millions) offers to buy grounds on the other side of the river to the extent of 400,000 metres, and to pay for them a sum of 2,600,000 florins.

The Proposed New Metropolitan Water Supply.—It appears that the proposed Colne Valley Waterworks, for obtaining a supply of water from Bushey, near Watford, for the North London district, was brought forward some twenty years ago, when it was defeated by the New River Company. The present proposal, which involves the sinking of wells at Bushey, and which will be submitted to Parliament next session, is for supplying the district of Harrow, Stanmore, Edgware, Hendon, Kingsbury, Willesden, Elstree, Aldenham, and the surrounding locality.

Industrial and Fine-arts Treasures Exhibition at Wigan.—The opening of the new infirmary premises at Wigan, which have been erected at a cost of nearly 30,000*l.*, is to be celebrated at Easter by an exhibition on rather an extensive scale. The inhabitants of this part of the country are making great efforts in connexion with the undertaking, having already raised, by voluntary subscriptions, nearly 25,000*l.* An industrial section, to include machinery in motion, is also being formed. A special exhibition of coal-cutting machines is talked of.

The Site for the Municipal Buildings, Leicester.—A meeting of the municipal buildings committee, consisting of the whole council, was held last week in the town library. A long discussion took place as to whether the municipal buildings or the sewerage of the town be first gone on with, and it was ultimately decided, by a majority of 25 to 18 votes, to sell the Friar-lane site, and proceed at once with the erection of municipal buildings on the Cattle Market site. What has become of the competition designs?

Wall-Painting in St. Martin's, Birmingham.—An interesting discovery has been made in the course of the removal of the chancel-walls at St. Martin's Church, Birmingham, namely, a wall-painting of St. Martin, the patron saint of the church. The saint is mounted on horseback, and is in the act of dividing his cloak between two beggars; the legend peculiarly associated with his name. The painting was found upon the chancel-wall, near one of the side windows. The period is believed to be early in the reign of Richard II.

Gratifying, if correct.—The medical officer of the Westminster Board of Works says, in his annual report (the sixteenth),—"From the vigilance that is exercised by your sanitary inspectors in constantly visiting the dwellings of the poor, I am at once informed of any infringement of the Act relating to overcrowding, and I am happy in being able to inform you that during the past year the cases have been so few as hardly to render it necessary to refer to them in this report."

Indian Views at the Society of Arts.—The lecture-room of the Society of Arts has been crowded by an interested audience, attracted by a series of views of Indian temples, idols, and illustrations of every-day life, exhibited by means of the magic lantern. The photographic views, which have been taken by Captain Lyon, late of the 86th regiment, during a stay of six years in India, include, it is said, every temple of note in the great Indian empire.

Discovery of a Painting in St. Joseph's, Axbridge.—During the repairs to the roof of the ancient church of St. Joseph, Axbridge, some lead had to be replaced, and underneath, to support the old lead, two perfect paintings of St. Paul and Zacharias were discovered. Some hedge-carpenter had divided the panels, upon which the paintings appear in excellent preservation, into three parts, and had then nailed them to the lead. The paintings appear to have been done in or about the fifteenth century.

Reading Architectural and Archæological Society.—The opening meeting of the season was held on Wednesday evening, the 4th inst., at the Athenæum. An address was delivered by the newly-elected president, Mr. Joseph Morris, after which a paper was read by Mr. C. Holmes upon "Mechanical Appliances considered as Building Improvements." Captain Kennedy and Mr. Clapton C. Rolfe have been elected members of the Society.

The Shaft at Leavesden.—The chimney-shaft at the Leavesden Schools was blown down during the recent heavy gale of wind. The bricks fell on the roof of the boys' playground, and destroyed it. A correspondent thinks some explanation is needed.

Fall of a Factory in Bristol.—A serious affair has occurred in the vicinity of the Great Western Railway Terminus at Bristol, in the sudden fall of the roof and three floors of the great factory just erected by Messrs. Brock & Bruce, builders and contractors, for their own workmen. The circumstances are so peculiar that we hope to be able to obtain some further information on the subject before we say more about it.

Fire at a Chapel in Tewkesbury.—On Sunday before last a fire broke out in the Independent Chapel, Tewkesbury. The stove in the class-room, in the front part of the chapel, had become heated and had set fire to the woodwork. The fire was subdued by the active exertions of those who had assembled in response to the crier's bell, and who were fortunate in having a good supply of water near at hand.

Surveyor for the County of Montgomery. A correspondent states that Mr. Sweetenham, of the firm of Powel & Sweetenham, of Newtown, has been elected. About fifty candidates sent in testimonials. Another correspondent forwards a letter for publication which would subject us to an action for libel on the part of the Board.

Winchester Cathedral.—In the recent gale the parapet of the east end (south side) fell, and very seriously damaged the roof of the southern aisle of the choir, the lead being crushed and beaten into holes, and even the massive rafters were in two or three cases snapped. The repairs are being executed under the eye of Mr. John Colson, the cathedral architect.

An Exportation of Labourers.—The largest sale of land ever made to one person has just been effected by Gen. Carr to Mr. G. Grant, of London. The land is said to consist of seventy square miles, adjoining the territory of the Kansas Pacific Railroad, and will be let out in farms to labourers who will emigrate from England next spring. We are sorry to hear it.

The Albert Gold Medal of the Society of Arts.—The Prince of Wales, as president of the Society of Arts, has presented to Mr. Henry Bessemer the Albert Gold Medal, for his eminent services in developing the manufacture of steel.

Female School of Art in Bavaria.—We are glad to hear that a plan has been arranged with the sanction of the king for establishing a school of art and industry in Bavaria for female students.

Local Boards' Engineers.—The West Ham Local Board, London, have unanimously granted their engineer the privilege of private practice in addition to a salary of 500*l.* per annum.

Ely.—At a meeting held on Wednesday last, Mr. R. Reynolds Rowe, F.S.A., of Cambridge, was unanimously appointed to the office of surveyor to the Dean and Chapter.

Horfield Barracks, Bristol.—We hear that the plans have been adopted for the enlargement of Horfield Barracks, and that the works will be almost immediately begun.

Salisbury Cathedral is being provided with an efficient supply of water, and hydrants are being erected for use in case of fire.

TENDERS

For road-making and drainage works, at Shepherd's Bush, for the British Land Company, Limited:—

Ames	£2,850	0	0!
Chamberlen, Bros.	1,614	0	0
Harris	1,490	0	0
Bloomfield	1,487	0	0
Haynes	1,430	0	0
Jackson	1,400	0	0
J. & S. Williams (accepted)	1,300	0	0
Neave & Son (too late)	1,290	0	0!

For business premises, at Penge, for Mr. F. Andrews. Messrs. Spalding & Knight, architects. Quantities by Mr. Fleetwood:—

Brass	£1,887	0	0
Carter & Son	1,853	0	0
Scrivener & White	1,794	0	0
Temple & Forster	1,790	0	0
Downs & Co.	1,788	0	0
Nightingale	1,767	0	0
Tostevin	1,747	0	0
Hughesdon (too late)	1,675	0	0
Ockenden	1,635	0	0
Boyce	1,624	0	0
Archer (too late)	1,582	0	0
Saul	1,549	0	0

For Danish Chapel, King-street, Poplar. Mr. John W. Morris, architect:—

Sheffield	£789	0	0
Abraham	769	0	0
Mark	758	0	0
Watts	750	0	0
Atherton & Latta (accepted)	725	0	0

For proposed alterations at Abney Chapel, Stoke Newington. Messrs. Tarring & Son, architects. Including extra cost of pitch-pine for joiners' work and iron ornamental sashes:—

Hayworth	£1,442	10	0
Shurmur	1,369	0	0
Staines & Son	1,357	0	0
Richards	1,168	0	0
Stevenson	1,165	0	0
Brindle	1,127	0	0
Linfield	1,105	0	0
Wagner	1,044	0	0

For fitting up the Free Library, borough of South Shields, with pitch-pine book-cases, counters, &c., and altering and extending lavatory, w.cs., &c. Mr. Matthew Hall, borough surveyor:—

	Library Fittings.	Lavatory, &c.
Suddards	£285	£95
Chapman	257	...
Scott & Co.	250	120
Nichol	235	119
Purvis	215	93*
Fishburn	209	105
Harwood	183*	110

* Accepted.

For pulling down and rebuilding carriage factory, at Paddington, for Mr. Wm. Miller. Mr. Edward Monson, jun., architect:—

Harris, Bros.	£1,155	0	0
Hatten	875	0	0
Sneesum	820	0	0
Parsons	725	0	0
Preedy & Son	698	0	0
Temple & Forster (accepted)	647	10	0

TO CORRESPONDENTS.

Cast Sheet Lead (a correspondent wishes to be informed the price of cast-sheet lead one and two centuries ago).—J. W. M.—G.—R. Y.—B. R. T.—L. H. I.—N. St. B. B.—T. H.—S. S.—T. B.—J. T.—G. A.—G. W.—H. G. B.—C. E. A.—H. & Son.—An Architect.—T. P.—J. L. H.—J. P.—F. K. S.—W. J. B.—J. R. C.—H. C.—Lieut. O. (we wait to hear from him).—S. G. B. (see our last number).—E. D. (cancelled, having appeared elsewhere).—E. (ditto; we will have nothing to do with "circulars").—W. & Sons (next week).—Mr. N. (ditto).—G. W. B. (ditto).

We are compelled to decline pointing out books and giving addresses.

All statements of facts, lists of tenders &c., must be accompanied by the name and address of the sender, not necessarily for publication.

NOTE.—The responsibility of signed articles, and papers read at public meetings, rests of course with the authors.

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INSPECTOR of GAS LIGHTING, City of London.—The Commissioners of Sewers of the City of London are in WANT of a fit and proper PERSON to fill the above Office, at the wages of 45s. a week. Age 25 to 35 years. A general statement of the duties can be seen at this Office.—Applications and testimonials giving full particulars as to past employment, &c. with certificate of age, must be addressed to the undersigned, and delivered on or before TUESDAY, the 31st day of DECEMBER, 1872. Candidates will have to attend a committee for examination, on WEDNESDAY, the 8th of JANUARY, 1873, at TWO o'clock. The person elected must give up his whole time to the duties of the Office.

JOSEPH DAW, Principal Clerk.
Sewers Office, Guildhall, November 29, 1872.

PARISH of CHELSEA.—INSPECTOR of REGISTERED LODGING-HOUSES and DUST INSPECTOR. Notice is hereby given that the Vestry of this parish will, at their meeting, on TUESDAY, the 31st inst. consider applications for the appointment of INSPECTOR of REGISTERED LODGING-HOUSES and DUST INSPECTOR. The salary, including travelling expenses, will be 65*l.* a year. The person appointed will be required to square and cube dimensions, to reside in a central part of the parish, and to devote the whole of his time to the duties of his office. A statement of the duties (subject to additions and variations from time to time), with other particulars, may be seen here. Applications, in the candidates' own handwriting, with testimonials of recent date as to character and fitness for the office, not more than three in number, may be sent in until TWELVE o'clock on the day above mentioned, and must be under cover, indorsed "Application for the Appointment of Inspector of Registered Lodging-houses and Dust Inspector." Personal attendance is necessary; applicants should, therefore, be here by THREE o'clock on the above-named day. The expenses of application will have to be defrayed by the applicants, as no travelling or other expenses will be allowed.—By order of the Vestry,

CHARLES LAHEE, Vestry Clerk.
Vestry Hall, King's-road, Chelsea, S.W. December 18, 1872.

MARKET HARBOROUGH UNION.—WANTED, an INSPECTOR of NUISANCES for the Market Harborough Union, in the counties of Leicester and Northampton, comprising an area of 64,340 acres, and a population of 18,991. The salary will be at the rate of 100*l.* per annum.

The duties will be:—1. Those contained in the order of the Local Government Board dated the 11th day of November, 1872, and in such other orders as the Board may from time to time issue.

2. To make a complete sanitary survey of the whole district, and furnish a detailed written report thereon to the Sanitary Authority by the 25th day of March next.

The appointment will be subject to the approval of the Local Government Board, and in the first instance can only be made up to the 15th day of April, 1873.

Candidates are requested to send applications, in their own handwriting, to me, the undersigned, stating age (not exceeding fifty years), residence, past and present occupation, with recent testimonials as to qualifications and character, on or before TEN o'clock a.m. of MONDAY, the 30th inst.—By order, JOHN LESTER, Clerk.
Market Harborough, December 17, 1872.

MADELEY UNION.—The PUBLIC HEALTH ACT, 1872.—Notice is hereby given, that the Rural Sanitary Authority of this Union will (subject to the approval of the Local Government Board) at their Meeting, to be held in the Board-room in the Union Workhouse, Ironbridge, on FRIDAY, the 17th day of JANUARY, 1873, at ELEVEN o'clock in the morning, proceed to appoint an INSPECTOR of NUISANCES for the whole of the Union. The Inspector will be required to make a perfect sanitary survey of the whole district, including the sewerage systems and water-supply of all the towns and villages under the control of the Rural Sanitary Authority of the Madeley Union, and report generally on its condition and requirements, as well as to perform all the duties of Inspector, as prescribed by the Sanitary Acts and by the regulations of the Local Government Board. The number of inhabited houses in the Union at the census of 1871 was 6,189.

The appointment will, in the first instance, be made for six months, from the 17th January, 1873, at a salary of 4*l.* 4*s.* per week, such salary to include travelling and all other expenses.

Applications, with testimonials, to be sent to me on or before the 10th JANUARY next, and the Candidates selected will receive notice to attend on the day of election.

By order,
HENRY BOYCOTT, Clerk.
Ironbridge, December 17th, 1872.

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CLERK WANTED, in a small Builder's Office in the West End, for two or three hours of an evening. One well acquainted with builders' books and making out accounts.—Address, stating terms, to No. 167, Office of "The Builder."

CLERK WANTED, in a Surveyor's Office, who writes a perfect fair copying hand. Writing shorthand and knowledge of accounts in addition would be useful, but the handwriting and good character are alone essential.—Reply, stating full particulars and salary required, to SURVEYOR, care of Mr. Hall, Stationer, 78, Old Broad-street, E.C.

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